University of Alberta

Making the Links: The Politics of Multimedia in the Humanities

by

Andrew Neil Mactavish

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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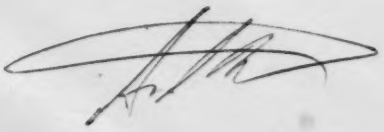

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The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Making the Link: The Politics of Multimedia in the Humanities" submitted by Andrew Neil Mactavish in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Abstract

This dissertation studies the politics of multimedia in the humanities. It urges that we adopt new strategies for legitimizing technological practice in the humanities, strategies that may mean disrupting traditional notions of humanities instruction ad research. It considers threats, both real and imagined, to the humanities as an institutional organization of academic disciplines and as the institutionalized study of cultural expression. It encourages our engagement with technological practice so that we may successfully influence technology's socially equitable development and use.

First, this study considers the relationship between the humanities and technology within its historical context to show how deeply rooted the bias against technology is in traditional conceptions of the humanities and how the humanities is under increasing pressure to demonstrate its relevancy within the context of economic growth. Second, it considers hypertext theory as a significant attempt to legitimize technological practice in the humanities. While most hypertext theorists uncover constructive connections between technological practice and human expression, their theorizations ignore the materiality of multimedia production and consumption. Their focus upon linguistics-based and narrative-based theories of meaning prove inadequate to understanding our astonishment at participating in technological spectacle. As such, they retain the parallel binaries between word/mind/intellect and image/body/emotion that have played a significant role in defining the humanities against technology and technological practice.

This study ends with a consideration of the performativity of astonishment in computers games that maintains connections between the physical and the psychological in our experience of multimedia.

Acknowledgements

The research and writing of *Making the Links* has spanned such a long period of time that I cannot possibly acknowledge all the people whose input and support have helped bring this dissertation to completion. But there are some whose contributions need to be noted.

First and foremost, I owe a large debt of gratitude to David S. Miall, without whose patience, guidance, and insight this dissertation would never have seen the light of day. David, I will always remember that fateful meeting early in my PhD studies when I asked you "What's up with humanities computing?" Little did I know then how that meeting would change everything.

The second most fateful meeting for this dissertation was with my friend Daniel Coleman who had the nerve to suggest that I switch PhD topics to study hypertext and multimedia. I like your nerve Dan.

More recently, I have had the good fortune to work with Geoffrey Rockwell, whose endless supply of remarkably creative ideas has lead to some of the most stimulating discussions on humanities computing and multimedia that I have ever had. Thanks for remembering what it was like when you went through it. Our meetings with Rocco provided oft-needed relief.

I also owe my thanks to Ted Bishop, Mike O'Driscoll, Julie Rak, Michael Szabo, Doug Brent, and Paul Hjartarson for a stimulating Friday afternoon of discussion; to Jim Mulvihill and Garrett Epp for all the work I caused you; to Paul Dyck and Ray Siemens, who continue to share with me their own experiences in humanities computing; to Jim Doran for walking from office to office; to all of the members of the Orlando Project for

showing me that humanities computing means collaboration; to all of my colleagues in the Humanities Computing Centre and the School of Art, Drama & Music at McMaster University for understanding what I was going through; and to the Prothonotary Warbler I saw in Dundas Marsh that proved to me beyond a doubt that there is more to life than multimedia.

But the deepest and most heartfelt thanks goes to Liana and Olivia, who put as much of themselves into this dissertation as I did, and who have never known me but as a PhD student. Just think what's ahead!

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Introduction

Hype and Hope:
Celebrating Multimedia in the Humanities

Optimism over digital technologies is hard to ignore. Except for the short-lived and, in hindsight, mainly unnecessary global anxieties over the Y2K bug, most of the world cannot seem to stop for breath in its celebration of computer technologies. Certainly, there is significant concern over the computerization of the world, but overall, there is a celebratory, if not irrational, optimism about the technological present and future. If it isn't the enthusiastically perceived need to connect everything and everyone to the Internet, then it's Wall Street's feeding frenzy on dot-com money-losers like Amazon.com or hi-tech manufacturers like Nortel. Go to almost any bookstore (online or on the street), and you'll find numerous celebrations of the Internet as a virtual community, as a place to make your fortune, as a place to spend your fortune, or as a repository of all the knowledge you could ever want. Even the recent outbreak of the "I Love You" virus didn't put a damper on things. Rather, it became another reason to celebrate the Internet as a community-building space, for the virus brought the world together as a community suffering from the evil machinations of computer hackers. As if in one large global village, web surfers from Halifax to Hong Kong and Little Rock to London all shared the same experience of frustration within a matter of a few hours. All in all, the world seems happy with computers.

This dissertation is another celebration of computer and Internet technologies, although I like to think it is more tempered than some. I believe that the Internet has much to offer us, although I wouldn't encourage everyone to connect—an unlikely reality given the cost of access—and I see no reason why my refrigerator should automatically e-mail my local food market this week's grocery list based upon what's not in my fridge. Indeed, there are many things about a digital culture that make me nervous. I worry about how easy it is for predators to seek the confidence of children; I am disturbed by the number of pornographic sites online and the e-mail (spam) I get advertising these sites (will my children be the target of porn spam?); I am troubled by the ease with which the data hungry can retrieve information about my surfing and buying habits; and I am concerned that the Internet is a means to maintaining old social divisions and creating new ones between those who have access to the web and those who do not.

I haven't always felt these anxieties about the Internet. In fact, I too have suffered from frenzied excitement over what I believed to be no less than a revolution in the making. Forget the Industrial Revolution; we've got ourselves a Digital Revolution right here and now! (I still have bouts where my excitement gets the better of me, but I have since learned to hide it more effectively, or at least express it within the detached tones of academic discourse.) When I began surfing the Internet through a local bulletin board service (BBS) in the late 1980s, I was bewildered at the whole concept of e-mail and online discussion. In addition to downloading more free shareware than I knew what to do with, I began searching out discussions on academic topics related to my Master's graduate work in Victorian literature. In addition, I subscribed to a Canada-wide e-mail service, Suzy, so that I could have e-mail conversations with my brother 5000kms away.

We excitedly composed very long e-mails in a word processor, compressed them using a zip program, fired them off through our 2400bps connections, and then, completely missing the point of e-mail, we called each other on the phone to say "You've got e-mail!"

During the early years of my PhD programme, I discovered NCSA Mosaic, the first graphical web browser released in 1993 for all common computer platforms. Here was the revolution I had predicted. Having been experimenting with hypertext authoring tools and programming environments, I longed for a freely available, easily distributed, and platform-independent environment for developing academic hypertext applications. The graphical world wide web became something filled with so much potential, I could barely contain myself.

Around the time that Netscape had its fantastical public offering in 1995, the Department of English at the University of Alberta in Edmonton, Alberta, in partnership with Guelph University in Guelph, Ontario, won a Major Collaborative Research Initiative grant from the Social Sciences and Humanities Research Council of Canada to create a large SGML-based hypertext database covering the history of British women's writing. This academic project, now called the Orlando Project, told me that doing research in humanities computing was a legitimate academic endeavour. Other projects around the world could have led me to a similar conclusion, but none legitimated the endeavour in my own institution as Orlando did. In my mind, humanities computing was no longer only text analysis; it was now interactivity, document distribution, database design, and interface design. A few months after starting as a graduate research assistant

on the Orlando Project, I changed my dissertation topic from a study of the Victorian novel to a critique of hypertext theory.

My anecdote does not end here (I promise it will stop soon). My dissertation underwent other transformations, mainly in response to my being hired to help design, propose and teach in a new undergraduate programme in Multimedia at McMaster University in Hamilton, Ontario. This experience and my time on the Orlando Project combined to show me that hypertext, multimedia, and other forms of humanities computing share a politics within the context of the humanities, a politics entangled within long-standing definitions of a liberal education, divisions between theory and practice in the humanities, general assumptions about technology and culture, and the changing economics of post-secondary education and research. Both the Orlando Project and McMaster's programme in Multimedia, as institution-based movements towards the legitimization of humanities computing, demonstrate this politics.

A significant part of the research for this project comes out of my experience with the programme in Multimedia at McMaster University. Bringing our proposal through the many internal committees gave me first-hand experience of the resistance to technology and practice in the humanities, even when practical skills training is immersed within the contextual pool of theory and criticism. The most frequently expressed fear, and it's a legitimate one, is that by allowing practice-oriented programmes into the humanities, we may be opening the floodgates to the economic interests of government and industry. In this day of government cutbacks to universities, the pressure is on to partner with industry, or as others might put it, to sell out to economic interest. Some resistance to our Multimedia programme expressed these anxieties like

this: "Let one technical programme into the humanities, and more will follow. This will spell the end of non-practice-oriented programmes like Classics, Philosophy, and English." This may become true if we allow external interests to design our curriculum, sit on our committees, and run our Dean's Offices. But thankfully, this is not yet the case.

The process of building the Multimedia programme, however, also illustrates the new economics of post-secondary education, for the programme is sponsored in significant part by a provincial fund intended to double the number of Computer Science students in Ontario universities and colleges. In addition, part of the funding formula required that we secure matching investments from industry. For some of our colleagues, this seemed rather foreign to their understanding of the humanities' and its position within society. The humanities is not used to thinking about partnering with industry for the main reasons that this might compromise the impartiality of our research or signal our surrender to capitalism's economic bottom-line mentality. These are not the only possible outcomes of industry relations. Rather than allow our defensive postures to stymie creative solutions, we in the humanities need to adopt strategies for securing funding without compromise, but with the optimism that we may in fact have a better chance of affecting social change through industry partnerships. It's a potentially dangerous terrain, and one potentially dominated by economic power, but, if anything, the humanities is strong at navigating its way through difficult philosophical issues.

As a final remark on my personal experiences informing this work, it is significant that I was given an academic position at McMaster University prior to the completion of my PhD dissertation. Obviously a remarkable boost for my career ("unbelievable" is the word I still use), this good fortune also reveals how

underdeveloped Humanities Computing and Multimedia are as areas of academic study. At this point in time, there very few graduate programmes in Canada focused on Humanities Computing or Multimedia. The University of Alberta has a Master's programme in Instructional Technology and is currently proposing a Masters in Humanities Computing to begin in 2001. In addition, the University of Waterloo recently announced an MFA in Digital Media, there are other MFA programmes where students can focus on digital art, and many graduate programmes in English, Linguistics, Modern Languages, Education and other areas support the use of digital tools or theses on areas of cyberculture. However, few graduate programmes treat these areas as disciplines in and of themselves.

The consequence is that the qualifications to teach in Humanities Computing and Multimedia are not as simple to identify as they are in other, more traditional areas of the humanities, where disciplinary markers indicate a certain level of subject competency. It also means a general shortage of qualified people in the area, as our own searches at McMaster have proven. In the 1999-2000 academic year, there were a handful of advertised academic positions in Canada that could be classified as Humanities Computing or Multimedia. For example, the University of Western Ontario had one cross appointment in Multimedia and Visual Arts and another in Multimedia/Hypertext and Education, Ryerson Polytechnic University had a position in New Media, McMaster University had an appointment in Computer Graphics and Multimedia, and the University of Alberta advertised a position in Cyberculture. It is interesting to note that each of the ads, like Westerns', stressed some level of practical experience: "Proven experience in computer-based multimedia making, various software packages, and web site creation is

necessary." Also, they read more like open nets cast to capture applicants with almost any kind of humanities computing experience than like targeted advertisements seeking particular skill sets. The University of Alberta seeks someone with "hands-on experience with *computing in humanities disciplines* and research interests in any of the following areas: *the www, politics and economics of access to cyber-culture, virtual reality, technology and pedagogy, bibliography and editing, media history*" and Western wants "an MFA or Ph.D. in *a relevant discipline* that studies multimedia theory and production" (emphasis added). Unable to single out a discipline or an area of desired expertise, these ads cast an interdisciplinary net in the hopes of finding someone who works in the general area.

There are two points I am trying to make here: first, Humanities Computing and Multimedia are being built as academic areas combining the practical and the interdisciplinary; and second, as academic areas, they are only in the very early stages of development. As such, we are in the position to observe and influence the effects of their inclusion within the humanities. This dissertation was written for these very reasons: to observe and, hopefully, influence.

Definitions

There are a number of terms in this work that are important to my study. While their meaning frequently comes out in the context of their use, the terms are slippery in their everyday usage and so, to avoid confusion, I want to pause briefly to define them.

The Humanities

Throughout this work I refer to the humanities in two ways: first, as an institutional organization of disciplines in post-secondary education and, second, as the collection of academic areas studying cultural expression. These two meanings do not always coincide in the organization of academe, for the disciplinary borders between the humanities, the social sciences, and, in some cases, even the sciences are quite porous. For instance, at some institutions, disciplines such as linguistics and history are included in the social sciences while at others they are included in the humanities. Art and art history are frequently positioned in a faculty of fine arts or visual arts, but sometimes in the humanities. And, further, at other institutions, the distinctions between the humanities and the social sciences is blurred even more by the adoption of a faculty of arts which includes both the humanities and the social sciences. While the disciplines that constitute the humanities vary from institution to institution, I rely upon a general sense of the humanities as including areas that study a variety of forms of cultural representation, including language, literature, performance, visual art, philosophy, and cultural discourse in general. Even though academic areas have different faculty settings, I treat them all under the same heading, for it is the study of cultural expression that I mean when I refer to the humanities.

I should also note that I sometimes use "liberal arts" and "liberal education" to mean a university education built upon the humanist ethos of seeking knowledge as an end in itself as opposed to knowledge for particularized training. This meaning comes out of the early developments in the modern university, especially as they are expressed by John Henry Cardinal Newman in nineteenth-century England.

Are Humanities Computing and Multimedia Academic Fields?

To this point, I have been using the words "humanities computing" and "multimedia" to signify academic areas, but what exactly defines them as academic areas is difficult to explain, especially as scholars have been trying to establish them as legitimate for only a relatively short period of time. Since these terms are critical to this study, I want to deliberate for moment on what I mean when I use them to signify academic areas and practices.

On a basic level, humanities computing signifies the application of computing to humanities research. But computing is now everywhere in the humanities—computers are used for word processing, conducting and posting research, applying for research grants, administering grades, communicating with colleagues, etc.—so we cannot define humanities computing as an autonomous field of study if it is practiced by most scholars in most humanities fields. We need to be more specific about the methodologies and objects of research that distinguish humanities computing from other fields. Some significant attempts have been made to delineate the field, even though there is no clear consensus. For instance, in "What is humanities computing," Willard McCarty argues that

> Humanities computing is an academic field concerned with the application of computing tools to arts and humanities data or to their use in the creation of these data. It is methodological in nature and interdisciplinary in scope. It works at the intersection of computing with the arts and humanities, focusing both on the pragmatic issues of how computing assists scholarship and teaching in the disciplines and on the theoretical problems of shift in perspective brought about

> by data, [this last phrase is odd: does he mean the concept or theory of data?] and how scholarly processes may be understood and mechanized. ...Its object of knowledge is all the source material of the arts and humanities viewed as data.(McCarty, "What is humanities computing?")

For McCarty, humanities computing is primarily concerned with the methodological issues of research across the humanities disciplines. The object of research is, for the main part, the same material studied by traditional areas of the humanities, but viewed as data manipulated by the computer.

Espen Aarseth's understanding of humanities computing shares McCarty's emphasis upon methodological interdisciplinarity, or what he calls the "computing humanists' methodological community" (Aarseth, 1997), but he also includes the study of digital works of expression because he does not believe that other areas in the humanities are well-suited to such study. Aarseth uses the example of computer games to argue that "The opaque nature of digital information technology, the programmed mechanisms beneath the sign surfaces, makes special knowledge of computing necessary for the study of these media" (Aarseth, 1997). So, Aarseth adds digital works created outside the context of academic research to McCarty's focus on interdisciplinary methodology to come up with an object of study that includes artefacts not already studied in other disciplines.

I share Aarseth's belief that digital works of cultural expression demand specialized knowledge of computing for their study, but this area of research now goes under a variety of other names, such as cyberculture, multimedia, hypertext, hypermedia, digital media, and new media. In this dissertation, I use the word "multimedia" to

describe those digital artefacts that Aarseth includes in his definition of humanities computing or what he also calls "humanities informatics." Obviously, the borders between humanities computing and multimedia are quite blurred, since artefacts from each area could be included in the other. But, as the term "humanities computing" is used in everyday practice, it more often reflects McCarty's definition than Aarseth's additional meanings. Indeed, even the most important international academic organization associated with humanities computing—the Association for Computers and the Humanities—defines their membership as "people working in computer-aided research in literature and language studies, history, philosophy, and other humanities disciplines, and especially research involving the manipulation and analysis of textual materials."[1] It is this description of the practice of humanities computing, which fits well with McCarty's definition of the field, that I use when I refer to humanities computing. In my experience with the term's usage, people almost always mean computerized "research involving the manipulation and analysis of textual materials." And these textual materials are most often printed texts rather than non-print texts, such as images, animation, video and audio. Some humanities computing involves encoding image and audio databases for the manipulation and study of visual and aural works, and this trend will continue as new tools develop in the area. But even in this new application of humanities computing methodology to non-print texts, the object of study is one that is traditionally studied by other disciplines; it is not normally an artefact whose original medium is digital.

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[1] See the ACH web site at http://ach.stg.brown.edu/ (accessed September 2000).

It is dangerous at this moment in the history of academe to over-emphasize disciplinary boundaries, as the divisions between disciplines are becoming increasingly porous with the welcome work of interdisciplinarity. Ironically, at the same time that humanities computing scholars are trying to define their area of research as a distinct field, they are simultaneously defining humanities computing as interdisciplinary.[2] And so it is very difficult to pin down exactly what constitutes humanities computing. It is a moving target that makes precision ironically difficult in an area where the precision of computerized data analysis is one of its main practices. But for the sake of simplicity, I base my usage of "humanities computing" upon its popular usage amongst scholars in the field and their professional associations.

What is Text?

In my definition of humanities computing practices, I stress that the most common media under study is printed text. This is due mainly to a bias for the word in the humanities, a bias I examine throughout this study for its connection to intellectual hierarchies that value reading over seeing, but especially in chapter 4 where I demonstrate the inadequacy of linguistics-based theories for understanding media such as images, video, and sound. This bias is deeply rooted in the linguistics-based theoretical models offered by structuralism and post-structuralism and commonly used by humanities scholars to explain our experience of cultural artefacts in general, including multimedia. Frequently,

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[2] This leads McCarty to call humanities computing an "interdiscipline" (McCarty, "Humanities computing as interdiscipline").

the word "text" and its association with written language is used to describe any work of culture, whether the work is primarily words, images or sounds. This metaphorical use of the word "text" has become overly liberal and proves problematic when linguistics-based theories of textuality are applied to non-word-based cultural works. As visual theorist Barbara Maria Stafford argues, "the conjunction of *psyche* with *logos*" has had the consequence of "collapsing diverse phenomenological performances, whether drawings, gestures, sounds, or scents, into interpretable texts without sensory diversity" (Stafford, 6). Part of my goal in this dissertation is to question this seemingly automatic connection between psyche and logos and to argue that a theoretical framework for studying multimedia must consider elements of spectatorship and participatory performance that cannot be reduced to linguistic meaning.

To avoid a confusing mixture of meanings for the word "text," I have opted to use a series of terms to distinguish between kinds of cultural artefacts and the theoretical frameworks needed to study our experiences of them. Since in most cases a single term cannot adequately cover all contexts, my choice of terms is based upon the context in which they are raised. As such, when I refer to literary texts, or works based upon the word, I use the following terms: "written text," "linguistic text," "printed text," "literary text," "document," and "book." When I refer to works based substantially upon elements other than the word and which, as I argue, require non-linguistic theoretical models for their study, I use "non-print," "non-linguistic," and "non-word." My use of the negative is meant both to differentiate these works from written texts and to remind us of the linguistic bias that frequently accompanies their study in the humanities.

Return to Celebration I: Hype-or-Text?

I began by stating that this dissertation is another celebration of digital culture, and I don't mean to cast shadows upon my celebration by focusing upon the underdeveloped state of Humanities Computing and Multimedia as academic areas. Indeed, new undergraduate programmes are underway or in development, and new graduate programmes no doubt will follow. So the field looks quite promising, and we have good reason to be optimistic. But I want to steer shy of the tendency in much popular and academic writing in the last decade to celebrate digital culture to the point of hype.

It was my reaction against the hype of hypertext that formed the initial basis of this dissertation. Since Theodore Nelson first coined the word "hypertext" in *Literary Machines*—Nelson's classic text on his incredibly ambitious and visionary Xanadu "docuverse" system—hypertext commentaries have tended to succumb to the hype of an ideal but potentially unrealizable system of document linking. From George Landow's *Hypertext: The Convergence of Contemporary Critical Theory and Technology* (1992) to Richard Lanham's *The Electronic Word: Democracy, Technology, and the Arts* (1993) to Stuart Moulthrop's collection of essays on hypertext,[3] the early 1990s was a time of remarkably unbridled optimism about the potential of hypertext. Hypertext would free us all from the hegemony of print, connect the written world in a digital docuverse, and, most of all, lead to a new and glorious state of democracy.

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[3] For Moulthrop's online essays, go to http://raven.ubalt.edu/staff/moulthrop/essays/essays.html (accessed May 2000).

The Great Democratizer

> *There is in the new media a foreshadowing of the intellectual and economic liberty that might undo all the authoritarian powers on earth.*
>
> John Perry Barlow[4]

> *The 'magic' of the Internet is that it is a technology that puts cultural acts, symbolizations of all forms, in the hands of all participants; it radically decentralizes the positions of speech, publishing, film-making, radio and television broadcasting, in short the apparatuses of cultural production.*
>
> Mark Poster[5]

In the 1990s, nothing ignited fervor over the Internet quite so much as the promise of greater democracy and the decentralization of power. Mark Poster's comment that "The Internet is above all a decentralized communication system" (Poster, 204), means for some that all members of the new online community could have a voice in the public arena. Cyber-libertarians defending free speech claim that the Internet is a space where freedom of expression is immune from governmental control: "We are creating a world"

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[4] See John Perry Barlow's "Thinking Locally, Acting Globally," initially published in *Time Magazine* (15-Jan-96), but available online at http://www.eff.org/pub/Misc/Publications/John_Perry_Barlow/think_local_act_global_01 1596.article (accessed May 2000). Barlow says, "There is in these new media [Computer-simulated environments] a foreshadowing of the intellectual and economic liberty that might undo all the authoritarian powers on earth." And "By creating a seamless global-economic zone, borderless and unregulatable, the Internet calls into question the very idea of a nation-state."

[5] Poster, Mark. "Cyberdemocracy: Internet and the Public Sphere." Internet Culture. Ed. David Porter. New York: Routledge, 1997, 211.

declares John Perry Barlow in characteristically grand style, "where anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity" (Barlow, *Declaration*). Could democracy be realized in any fuller way than in the development of a new, completely open and public space of expression, one that connects geographic regions across a nation, even the planet?

And yet, it is not only the freedom to express that cyber-libertarians celebrate. It is also the freedom to receive information. Without a doubt, netizens have access to information like never before, whether in the form of a yet-to-come 500 channel universe, an electronic library of government documents, or a digitized version of Mark Twain's *Huckleberry Finn*. The question of whether too much information is being made available is not the issue here. The issue is that society's right to choose is exercised and thus strengthened by the freeing of information from the closed spaces of materiality in which it was once confined. As Stuart Brand would have it, "Information wants to be free" (quoted in Barlow, *Selling Wine*). The Internet is rekindling the Jeffersonian hope that government and culture will at last be freed from the manacling powers that, in the pre-Internet world, delimited the boundaries of expression and cultural choice available to the masses.

Putting aside the coziness of such a communal and somewhat utopian view, one cannot help but feel a little skeptical, perhaps uncomfortable, with the idea of decentralization on such a grand scale. Not only does the spectre of anarchy loom in the distant shadows of mass decentralization, but, taking the scenario to its extreme, democracy itself is threatened by the very decentralization that would accordingly give us greater democracy in the first place. But here I fall prey to the same sensationalist

language used to celebrate the Internet as the coming of true democracy. Instead of painting the Internet with the broad, sole stroke of "radical decentralization" (Poster, 205), I advocate that Internet theorists look more closely at particular elements of the Internet, and ask how specific uses of Internet technologies will affect specific social sectors. The place of communications technologies within the social matrix is far too complex a relationship to be simplified into a unidimensional word like "decentralization," for surely the Internet does not mean decentralization for all sectors of society. Indeed, since computer technology increases levels of automation, it is conceivable that some sectors may witness even greater centralization. The public is not guaranteed greater access to government simply because government offices have web pages and elected officials have e-mail addresses. Adopting Internet-based modes of communication may result in improved means of automating the social interface between government and the people. The use of Internet technologies, then, could mean that we gain even less access to government and that governmental power becomes even more centralized.[6]

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[6] Voice mail provides another example of how the interface between public office and institutions has become automated. Since voice mail can accommodate only so many options, developers of this technology must delimit the information they make available to end users. This is more like centralization than decentralization, for it means that these institutions shape the boundaries of the discourse between themselves and the public. In other words, they predetermine the information that will be exchanged prior to the conversation taking place.

The hype over democracy, therefore, is not something in which I participate. Rather, as much as I agree that Internet technologies have the potential to democratize, they have just as much potential to flex censorial power. In other words, they are as inherently anti-democratic as they are democratic; they can shut down conversation as easily as they can foster it. China is a good example. In an effort to damn the flow of capitalist-democratic ideas from the outside world, China has imposed very strict rules controlling Chinese Internet use. To maintain a firm grip, the government uses the very Internet technologies that allow for speech to monitor and control it. In the capitalist world, corporate interests use powerful technologies to sniff out web sites that might be considered libelous. Once they find one, they threaten the web master with a cease and desist order, thereby using the threat of an expensive law suit, regardless of who wins, to silence the voices of dissent. The Internet is what we make it.

Getting Into Shape: The Internet's Organizing Body

These days, the hype over the Internet seems driven more by capitalist greed than by ideals of education, community, and democracy that energized my own early excitement and continue to drive my research and teaching today. Whatever anarchy the world wide web once had, it is fast becoming a highly organized body, shaped and directed chiefly by the corporate sector and, to a lesser extent, by state interests and educational institutions. For industries as diverse as telecommunications and clothing, the web promises a new threshold of potential exchange, an opening frontier of markets that expands wider and deeper everyday as more and more consumers are convinced of an apparent necessity to plug in. It's as simple as "point and click" declares a comfortable

middle-class patron in a 1997 television advertisement for America Online, the world's largest Internet service provider. And it will connect you and your business to all corners the globe claim IBM and Cisco, whose advertising campaigns have focused on Americanized third world technological enlightenment. Not to be outdone by America Online's simplicity or IBM's and Cisco's ideological colonialism, Microsoft has asked "Where do you want to go today?", claiming that users of its operating system gain simple point-and-click access to the world. In other words, give us your business and we will give you the world at your fingertips, as if instant connection to the world—a world reduced to information and mediated by technology—is naturally what we all need and want.

More recently, America Online's acquisition of Time-Warner and Bell Canada Enterprizes' acquisition of CTV signal the settling of cyberspace by the telecommunications corporate giants. It is clear that these acquisitions represent the coming together of infrastructure and content, that those with the power to connect also have the power to present. Unfortunately, it may also mean that the model for cable TV distribution is somehow adapted for use on the Internet, which may mean the end of the Internet's promise as a democratic zone.

For governments, the web means power within the global economy and, according to its disputable claims, decreased disparity between have and have-not nations, communities, and individuals. In the early 1990s, for instance, the Clinton administration envisioned a superhighway paved with gold and created numerous councils and task forces on the National Information Infrastructure (NII) and the Global Information Infrastructure (GII) to claim its stake as the dominant force in the globally

extensive communications economy. In his 1994 speech to the International Telecommunications Union in Brazil, Al Gore exposed his Americo-centric position when he outlined the GII: "We now can at last create a planetary information network that transmits messages and images with the speed of light *from* the largest city *to* the smallest village on every continent" (emphasis added, Gore). One cannot help but read "American" for "largest city" and "foreign" for "smallest village," suggesting a unidirectional broadcast of American culture from modern, urbanized America to antiquated, rural third world nations, as if the US has nothing to learn or gain from foreign states.

Less sensationally visible than corporate or government interests, many universities and colleges have embraced the possibilities of the web as an informational and instructional space. For the educational community, the Internet has become an avenue to actualizing the conjoined goals of more effective and more cost-efficient instruction. While no longer the dominant shaping force of the Internet, educational institutions have been quietly creating and maintaining an electronic system of scholarly communication and instruction since the late 1960s. But with the transformation of the Internet into a new corporately dominated medium of exchange that crosses and blurs the boundaries between business, government, and education, the educational sector, while still developing new communications technologies, is at risk of becoming less the electronic frontier's settler and more the settled.

Regardless of the shifting dynamic of settler and settled, corporate, governmental, and educational interests, among others, are quickly shaping the Internet into an organized body. Many Internet users, whose web-surfing experiences seem anything but

organized, might disagree with such a statement; however, if they were to take a quick tour of the Yahoo! web search site, they would discover an ambitious and highly successful categorization of web sites. For instance, under the heading Arts and Humanities there are 27 subheadings ranging from Art History with 607 entries to Employment with 45 entries to Humanities with 35113 entries to Visual Arts with 9224 entries.[7] Indices for web information retrieval abound, Yahoo being only one of the many that attempt to make order out of electronic chaos. Recently, the concept of portals—customizable web entry points that automatically update links to news, events, entertainment, and shopping—has developed as large Internet service providers try to add value to their offerings. And emerging technologies, such as smart agents, bots, and meta-search engines promise end-users even simpler modes of information transfer as the paradigm for information retrieval begins to shift from user-active to user-passive. Without a doubt, the web is fast becoming an organized body.

Yet, in the face of the push to organize the web, there are disorganizing energies that threaten to reshape or scramble it. Friendly or hostile, the web is oblivious to the nature of the information that flows on its highways and byways. It is traveled by the selfless and the selfish, the left and the right, the oppressed and the oppressor. In addition to the relatively benign users seeking information and entertainment, less friendly

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[7] These figures were taken on May 17, 2000. It is interesting to compare these numbers with those from June 17, 1997. Arts had 25 subheadings vs. 27 in 2000, Art History had 987 entries vs. 607 in 2000, Employment had 23 vs. 45 in 2000, Humanities had 12464 vs. 35113 in 2000, and Visual Arts had 3867 vs. 9224 in 2000.

inhabitants lurk in the darker recesses of the web in the shifty shapes of hackers, crackers, and phreaks. Whether for profit or for the pure enjoyment of the challenge, they seek to disrupt the flow of information, to find its vulnerabilities, and to exploit them. And as if to put the web on even shakier ground, the very nature of its medium is unstable. The never-ending demand for increased bandwidth often requires web-surfers to upgrade their systems to keep their connections adequate to the task; web sites can come and go without so much as a trace; and entire quadrants of a continent can lose their link to the world when a server or satellite connection goes down. And then there are those hypertext links that move users from place to place, putting seemingly endless amounts of information at our fingertips. Yes, it might be as simple as point and click, but even with organizational tools like search engines, portals, and a web browser's history feature, it sure is easy to get sidetracked surfing the web, even lost.

Return to Celebration II: The Politics of Multimedia in the Humanities

Again, I want repeat that this dissertation is a celebration of computer technologies, not for their bringing forth some utopian state of freedom and democracy, but for the new forms of communication that we currently build with them and that we will build in the future. In particular, my celebration is for the potential future of multimedia technologies in post-secondary education. But my celebration is frequently tempered by what I call the politics of multimedia in the humanities, the resistances to multimedia that find their basis in power relationships that have little to do with multimedia works *per se*, but much to do with the arrangements of power and cultural value within the university and society in general.

Overall, this project demonstrates the politics of multimedia in the humanities first by establishing an historical and social context and then by illustrating how the assumptions informing this politics are reflected in attempts to legitimize digital culture in the humanities. I argue that multimedia poses a significant threat to the humanities as it is currently understood by many of its practitioners, especially in those understandings based upon parallel binary arrangements of culture/technology, humanities/sciences, theory/practice, immaterial/material, mind/body, text/image, intellect/emotion, and high culture/low culture.

In the opening chapter, I examine how the humanities defines itself against science and technology. Today's post-secondary education system is in many ways structured along lines of theory and practice, technological and non-technological. In the humanities' system of value, technology is always at the low end of the pole. I trace the modern origins of the non-technological humanities to the nineteenth century and follow a history of challenges to this definition from mid-nineteenth-century debates about science and culture, to early-twentieth-century definitions of the visual arts, to the famous argument between C.P. Snow and F.R. Leavis over Snow's *The Two Cultures*. Significantly, many of today's reactions against computer technology in the humanities repeat the traditional definition of the humanities as not technological. Ultimately, I argue that this definition of the humanities is based upon as essentialist understanding of technology that fails to see its cultural contingency.

In chapter 2, I continue my examination of a split between theory and practice, and illustrate how the field of humanities production is governed by a need to be separate from industry, practice, technical skill, etc. Drawing upon Pierre Bourdieu's theory of the

field of cultural production, I demonstrate how cultural, symbolic, and economic capital function in the humanities as a restricted field of production. The introduction of multimedia into the humanities threatens to disrupt the system of cultural evaluation. While some believe that this spells disaster for the humanities, I argue that it is not necessarily so. The chapter begins and ends with the example of McMaster's new programme in Multimedia to explore how the legitimization of multimedia through new academic programmes means adjusting relationships with industry, the sciences, and funding agencies.

In chapter 3, I explore the development of hypertext theory as the most significant attempt to date to legitimize computing in the humanities. Rather than focus on practice and the materiality of hypertext, the strongest works of hypertext theory, from George Landow, Jay D. Bolter, Stuart Moulthrop, Richard Lanham, J. Hillis Miller, etc., dematerialize hypertext and set its study firmly within the context of theory. As an extension or application of literary theory, hypertext becomes an easier sell within the humanities, where post-structuralism and post-modernism carry significant symbolic capital. I argue that a better theory of hypertext would look more closely at the material production and consumption of hypertext. This approach would mean rethinking the privileging of mind over matter, a bias that has its modern roots in the Enlightenment's placement of mind over body. And it would also mean thinking about the material properties of hypertext, including the politics of access to hypertext.

In the last chapter, I build upon my critique of hypertext theory in the previous chapter. I open with a description of a linguistic-bias in hypertext theory, a bias for the word that is common in the humanities, and one that resonates with the Cartesian duality

of mind and body. This bias for the word and its basis in Enlightenment notions of intellect does not provide a strong framework for the analysis of cultural works that are not based significantly upon linguistic text. In addition, it tends to denigrate works that are not written in text, and to support the alignment of language with mind and rationality, and a less worthy alignment of image with body and emotion. Indeed, critiques of contemporary culture often identify images of all kinds (television, music video, film, print advertising, the world wide web) as responsible for a general dumbing down of print society. Works of multimedia increasingly rely more upon visual and aural elements than upon linguistic elements. For this reason, hypertext theory proves inadequate to an analysis of multimedia.

Others have come to similar conclusions, but remain mired in a linguistic understanding of the cultural universe. Espen Aarseth wants to think about cybertexts as ergodic narratives, as literature that demands work (Ergos) to build paths or roads (Hodos), but he focuses mainly upon textual works to think about narrative. Janet Murray thinks much more about rich media in her analysis of cybernarratives, but she too is mainly interested in narrative, and narrative is heavily based upon a long tradition of print.

Through the examination of computer games, I argue that a study of multimedia needs to consider the visual and aural elements that make up the work. A theory based upon linguistic meaning cannot, for instance, account for the role of special effects in the experience of computer games or in the larger narrative of computer technology that gets performed by game players every time they play a game. Rather, a theory based upon the user's performative role in their own astonishment at special effects may more easily

explain our experience of visual spectacle, at least in the game player's performance of the special effects, the game's performance of the player, and the performance of technology that is the game itself.

Chapter 1

Meaningful Technology:
Technological Practice in Post-Secondary Education

Turning and turning in the widening gyre
The falcon cannot hear the falconer;
Things fall apart; the centre cannot hold;
Mere anarchy is loosed upon the world,
The blood-dimmed tide is loosed, and everywhere
The ceremony of innocence is drowned;
The best lack all conviction, while the worst
Are full of passionate intensity.

"The Second Coming"
W.B. Yeats

Engaging with Technological Practice

Somewhere within the "widening gyre" of millennial tumult, the humanities tries to defend itself from "the blood-dimmed tide" of over-technologization that threatens to drown the hope of a knowledge-enriched culture under a sea of mechanized, dehumanizing computer-mediated communication (CMC). Whether Luddite or enthusiast, most of us do not want technological advancement to erode the humanist ethos of knowledge building and preservation of cultural artefacts. But while most humanities scholars are in agreement on this point, the humanities in general is far from a consensus on how to engage with new information technologies. Do we bury our heads in the sand and ignore CMC? Or do we take a less ineffectual approach and adopt it as a

communications tool? If so, do we use the tool only for correspondence with administrators and colleagues? Or do we go a step further and incorporate this tool into our teaching? What about using it in our research? To date, one of the most fruitful academic applications of CMC has been the sharing of resources on the web. Perhaps we should envision CMC as more than a tool, but as a social medium worthy of the researcher's exploration of its social and cultural significance? Perhaps we should even teach CMC as a legitimate subject in the humanities?

These questions are increasingly the topic of debate in the humanities as we try to build an ethics of technological adoption that compromises neither the traditions of humanist scholarship nor its progressive advancement. It remains, however, that, while many humanist scholars benefit from the development and use of Internet-based communication technologies, for most, these technologies amount to no more than tools that support instruction, research, or publication. In other words, while scholars use e-mail, hypertext, and other world wide web technologies, there remains a noteworthy separation between CMC on the one hand and the content of scholarly research and instruction on the other. To borrow again from Yeats' "The Second Coming," technology acts as the falcon under whose direction the falconer/researcher expands his or her purview. But unlike falconers, who see the falcon and their skill with it as inseparable from the hunt, humanities scholars tend to separate technology and technological skill from the subject of research. In short, technology and technological skill work in aid of intellect rather than being intellectual in and of themselves. This separation between intellect and technology positions the humanities apart from the technological, giving the humanities a seemingly external and objective vantage point from which it may theorize

technology's dehumanizing over-emphasis upon efficiency. But this separation also prevents the humanities from influencing technology at the more creative and immediate level of practice. Theorizing technology is one thing; practicing it is something else. I do not mean to say that, when the humanities intervenes in technological development, it is only at the level of theory. Indeed, many humanist scholars that I know rely upon collective social action as a means to effecting what they see as destructive technological development. Their practice frequently informs and is informed by their theoretical research. Engaging with technology, whether in the form of written publication or collective social action, *can* influence technological development.[8] For, as I will argue, technology does not develop outside of culture; it is socially contingent.[9]

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[8] One need only consider the successful environmental protest movement in British Columbia that compelled MacMillan Bloedel to end its clear-cutting forestry practice. In this case, the application of technology was directly affected by the practice of social protest. Unfortunately, on 21 June 1999, Weyerhaueser, a giant in the US forestry industry, announced an agreement to purchase MacMillan Bloedel for $3.6 billion. The day the deal was announced, officials from Weyerhaueser stated that it would be premature of them to say whether or not they would honour MacMillan Bloedel's plan to end its clear-cutting practice.

[9] For two excellent discussions of the culturally contingency of technology, see Feenberg, Andrew. *Questioning Technology*. New York: Routledge UP, 1999 and Bijker, Wiebe E. *Of Bicycles, Bakelites, and Bulbs: Towards a Theory of Sociotechnical Change*. Cambridge, Mass: MIT Press, 1995.

But approaching technology primarily on the level of theory and through social protest can merely reinforce an "us and them" relationship between society and technology, where technology can be cast as either something separate from society or as something needing the watchful eye of the socially conscious rather than as something that the socially conscious develop in practice. As Langdon Winner argues, a more positive approach would be to create "public space[s] for the political deliberation about the qualities of an emerging technical artifact" (Winner, 79). In other words, we need to envision ways of making technological development a more democratic process, which for Winner means the inclusion of practitioners and operators at all levels of development. This is not to say that the humanities does not already develop technology. The recent development of the XML document encoding standard by a large group comprised of corporate and academic representatives is a fine example of the humanities participating in technological development. But there's plenty of room for more direct participation in other areas of technological development.

In the humanities, we might begin by thinking more about which areas of technological development we can most realistically and effectively influence through direct participation. This does not mean that each of us needs to become a technological expert, but it does mean that we should examine the structural obstacles to humanist scholars becoming technological practitioners, not the least of which is the predisposition of hiring, tenure, and promotion committees to overlook or undervalue technological practice in their emphasis upon written documents as the privileged evidence of original

contributions to knowledge.[10] It also means that the humanities should continue imagining new courses and programmes in which technological skill plays a key role in a student's education.[11] For the humanities to have a more influential position within technological development, it needs to imagine and support a combination of theory and practice.

Although not a new concept, adding practice to the equation still represents a radical shift in how we have historically imagined a humanities education, which, since the nineteenth century, has been based upon the expansion of knowledge for the sake of knowledge through theoretical or philosophical inquiry rather than upon the straight transmission of technical or physical skill. This is not to say that practice is absent from humanities scholarship; scholarly research and criticism *is* practice. And this is not to say that technical skill is absent from the humanities; indeed, most humanities students acquire skills in research and typing, and many humanities programmes require students

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[10] The Modern Languages Association's Committee on Computers and Emerging Technologies in Teaching and Research is currently working on a set of guidelines for assessing digital scholarly work. See "Draft Guidelines for Evaluating Work with Digital Media in the Modern Languages" online at: http://www.mla.org/reports/ccet/draft_ccet_guidelines.htm (accessed May 2000).

[11] This is already underway as courses in hypertext, multimedia, and cyberculture are developed and taught. For a list of courses with links to their web sites, visit the Resource Center for Cyberculture Studies at http://www.otal.umd.edu/~rccs/ (accessed May 2000).

to take at least some instruction in composition and rhetoric. In addition, as interdisciplinarity spreads, some humanities faculties allow students to combine their interests in humanities subjects with the more technical or practical disciplines outside the humanities. All the same, the focus on practice, when it takes on more than a supplementary role, remains an approach generally external to the humanities. Bringing technology into the core of a humanities education means thinking differently about the humanities and about the distinctions between theory and practice.

Such an epistemological shift also means examining how the structure of post-secondary education shapes and is shaped by distinctions between the technical and the critical, the physical and the intellectual, and how these distinctions structure and intersect with other social divisions, such as those based upon class. For instance, the distinctions that separate blue collar from white collar are based significantly upon divisions between manual labour (unskilled and skilled) and intellectual labour, divisions that Marx saw as the basis of capitalist class structure. However, the widespread diffusion of computer technology into many social sectors is blurring these distinctions or, in Barbara Maria Stafford's words, computers are "blueing the white collar" (Stafford, 13). And, as Malcolm McCullough argues in *Abstracting Craft*, as today's "information tools take on a physical dimension," the divisions between technological and intellectual skill, which "have formed the basis for social classes," "may begin to unite skill and intellect in new ways" (McCullough, 62).

Frequently cast as the strong arm of capitalist exploitation, technology, therefore, may appear poised to redefine the humanities, or worse, to make it irrelevant. For the humanities, then, technology-inspired millennial angst poses questions larger than "Will

the Y2K bug etherize my work?" It also raises troubling questions about the relationship of the humanities to the very social structures that scholars so often critique as inequitable. We need to ask, to what extent does the humanities' relationship with technology and technical skill maintain inequitable social structures and how can a re-envisioned humanities, one that engages with technology at the level of practice, work toward a more equitable application of technology?

I will address this question over two chapters, starting in this chapter with an exploration of technology and the humanities within the broad context of post-secondary education and finishing in the next chapter with a more narrowly focused look at the politics of technology within the field of humanities production. In this chapter, I will begin in the present by describing the place of technical practice in the current structure of post-secondary education in Canada, including the interconnected relationships between education, technical practice, and social divisions. From there, I will jump back to the nineteenth century where we find the modern origins of today's divisions between the humanities and the technical disciplines in the Anglo-American university. This section will focus upon a series of historical moments when debates about the aims of education, the nature of knowledge, and the social role of the university signal stresses in the divisions of education. While these formal divisions have never been uncontested nor untroublesome, the debates that reinforce them are often based upon a seemingly untroubled essentialist understanding of culture, science and technology. I argue that, once we recognize that technology is socially contingent, that its development works within culture, we open up possibilities for the humanities to shape technology through practice and to encourage a more democratic process of technological development.

Defining Technology

Even though my main goal in this work is to explore resistances in the humanities to a specific form of technology—computer-based communications—it is important to note that these resistances are based upon a tradition of resistance to a wide variety of technologies. But it is just as important to note that some technologies are accepted in the humanities without any resistance at all. The question here is, why are some technologies, such as the book, accepted without reservation and other technologies, such as electronic books, resisted? As a step towards answering this question, I would like to pause for a moment to define "technology" and the kinds of technology I refer to in my use of the term.

In its most basic and possibly least useful application, technology can refer to any human-made artefact, including the objects used in the manufacturing of artefacts and the very process of manufacturing itself. Drawing a line in the sand with a stick, on paper with a pen, or on a computer screen with a digital stylus and tablet are all technological processes, although some may seem more technologically rich than others. Expanding this further, the clothes we wear, the food we eat, the ways we practice hygiene, the culture we consume, and the forms by which we travel are all technological in some way. Even when we attempt to escape our technological society for more naturalistic, less technological spaces, we remain dependent upon technologies, not only to reach these spaces and for self-preservation once we get there, but also in our defining the natural and our experience of it in relation to the artificial. Indeed, everything we do involves technology of some form, or as Don Ihde remarks, "our existence is *technologically textured*, not only with respect to the large dramatic and critical issues which arise in a

high technological civilization ... but also with respect to the rhythms and spaces of daily life" (Ihde, 1).

While this generalized understanding of technology is useful to this study for raising questions about the differences we perceive between particular technologies, I focus upon a narrower band of technologies where the lines in the sand between acceptable and non-acceptable technologies has been, and continues to be, a topic of considerable debate in the humanities. In particular, I am interested in mechanical and digital technologies usually, though not always, developed and promoted by corporate interests for the sake of increased production efficiency and capital accumulation. These are technologies of mass production and distribution, but they are also high technologies used to advance various areas of scientific, medical, and now humanities research. Not all of these technologies are resisted in the humanities. For instance, while humanities technophobes may not see any danger to our minds and spirits in the shoe as a technology in itself, they might worry about the technology involved in the production and distribution of the shoe. Significant contradictions arise, however, when the technology of the book—a technology central to the humanities—is seen by some as more humanistic than the technology of the e-book. For reasons I will consider later, the digitization of the book destabilizes it and somehow brings it closer to the forms of technology which they see as anti-humanistic. In some cases, the printed book itself is not even recognized as a technology, and so we are left wondering what it is about digital technology that makes some see it as more technological and what it is about the book that hides its technology. But before I come to this, I need to consider how the

humanities sits in relation to technology in the structures of post-secondary education in Canada.

Technology and Technological Practice in Post-Secondary Education

In Canada, the divisions between the technical disciplines, which rely upon *technical* skills training, and the humanities disciplines, which rely upon *critical* skills training, is reflected in the institutionally defined boundaries that structure the differences between disciplines and faculties within the university, between individual universities, and between universities and colleges. In the following pages, I will describe the most significant features of these divisions, especially as they relate to technological practice.

I. Universities and Colleges

The boundaries between universities and colleges, while blurring more everyday, are defined in part by levels of emphasis on technical skill, utility, and practice. The following list of features describes some of the chief distinctions between colleges and universities in Canada. While neither exhaustive nor definitive, the list provides a basis for considering the role of technology and technical skill in post-secondary educational divisions.

1) *Programme Duration*: University undergraduate programmes are designed to take from three to five years to complete while college programmes are designed to take from a few months to two years. In spite of the fact that more and more colleges in Canada are offering two-year university preparatory programmes, most colleges prioritize their role in supplying the

skilled labour market with graduates as quickly as possible. The college's shorter programme duration points to its focus on utility and practice.

2) *Faculty Credentials*: Traditionally, faculty at a college have needed fewer educational credentials to teach. The current trend, however, shows us that PhD graduates, if they are able to secure full-time employment at all, frequently look to colleges where they must sacrifice research to heavier teaching loads. In addition, colleges look far more favourably upon practical experience in industry than do universities, which privilege institutionalized forms of education and research. In short, colleges privilege practical experience over educational qualifications.

3) *Full-Time versus Part-Time Faculty*: Colleges have tended to hire more part-time instructors than full-time. This helps build a faculty whose experience in industry remains current and can be ported directly into the classroom. Universities are increasingly relying on part-time instruction as well, but this is mainly for financial rather than pedagogic reasons. A part-time instructor in university English normally has little or no industry experience outside the university that can be brought to bear upon the subject of instruction. Conversely, part-time instructors in graphic design at a college are expected to include experience in the graphics industry in their instructional material. Once again, colleges privilege the practical.

4) *Research versus Teaching*: Colleges are inclined to emphasize teaching over scholarly research while universities do the reverse. This is most immediately visible in full-time teaching loads, where college instructors may be require to teach twice as many classes, normally without the "luxury" of teaching assistants. But like so many other qualities I list here, the line separating the college from the university is blurring as universities rely more heavily upon less expensive faculty options, such as contractual teaching staff. Frequently, this means that financially desperate PhD graduates are hired at a lower cost only to teach. Research and administration are not normally written into one year part-time contractual agreements.[12] The college emphasis upon teaching allows for a more focused, skills-oriented, and time-efficient transfer of technical skill.

5) *Practice versus Theory*: Although the differences in emphasis upon theory and practice are becoming less obvious, universities have historically focused more on the theoretical and colleges more on the practical. University programmes now cover the spectrum between the practical and theoretical, but theory still holds a privileged position in most university faculties. Yet,

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[12] Rhoades and Slaughter note a disturbing trend where expensive senior faculty members are terminated in the name of restructuring and then rehired contractually at significantly reduced pay. The rationale is that the contractual position does not include "student advising, curriculum planning, supervising, or research" (Rhoades and Slaughter, 34).

> under growing pressure to become more socially relevant, universities now offer practicum and co-operative options to students with the aim to produce graduates with industry experience and more employable skill sets. Perhaps predictably, the humanities has been slow to support such a practice-oriented approach.[13]

These five defining distinctions between universities and colleges, although not universal, signify the importance of the division between practice and theory in structuring post-secondary education. But they also show that the lines are blurring, especially as the university tries to cash in on professionalization. As I will explain later, these divisions are directly related to symbolic and economic social divisions. But while universities have traditionally carried greater social symbolic value, technical colleges are acquiring greater social and economic value, especially in the arena of multimedia design where there is a trend toward combining theory and practice through after-degree specialization. Rather than leave college for the more distinguished educational space of the university, students are progressing from the university to the technical college. In southern Ontario,

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[13] While most university co-op programmes are in engineering, the sciences, commerce, and other professional or practice-oriented programmes, there are humanities co-ops in areas such as technical writing, graphic design, and communications. Notably, the University of British Columbia recently instituted a co-op programme in English, now run under the umbrella of the Arts Co-operative Education Programme. See http://www.arts.ubc.ca/co-op/ for more information.

for instance, Sheridan College's post-graduate programmes in computer animation and computer graphics have the admissions' prerequisite of a university degree.

II. Internal University Divisions

In the university, technical skills training is central in varying degrees to most faculties except the humanities. Even the social sciences, which does not normally focus on technical disciplines, has a tradition of computer-generated statistics which demand that researchers acquire technical skills. In the sciences, there are divisions between applied and pure science that highlight different emphases in technical skills training, but each still requires technological competency to generate, collect, and analyze data. And in the professional disciplines, such as medicine, commerce, engineering, and, obviously, computer science, students learn a variety of computer skills essential to their training, skills ranging from computer-aided medical diagnosis, to electronic stock exchanges, to computer-aided design, to software engineering. It would take more space than I have to detail all the levels of technological skill taught across the university, but even a quick glance illustrates the importance of technical skill to many disciplines within the university.

Many disciplines, that is, except those in the humanities. Indeed, most humanist scholars, regardless of technological inclination, would agree that technological skill is *not* privileged in humanities research. Pockets of technologically-based research and instruction have developed, most notably in the areas of language learning, where computer-based instruction has replaced tape-based learning technologies, and distance learning, where the Internet provides a relatively inexpensive means for synchronous and

asynchronous communication. And certainly, more humanities researchers are using computer technologies for communications (e-mail), course outlines (web pages), research (word processing), and grades (spreadsheets). In general, however, technological skill has not been institutionalized as central to a humanities education to the same degree that it has been in many university disciplines.

III. External University Divisions

To speak of the university, however, as a single, non-differentiated entity would be to ignore significant differences between universities. For instance, some universities privilege technical disciplines while others privilege humanities disciplines and still others privilege professional disciplines. Indeed, Ryerson Polytechnic University in Toronto, which offers programmes in applied arts rather than the liberal arts, thinks differently about the arts than does Dalhousie University in Halifax, which offers traditional programmes in the liberal arts. Since some university presidents, vice-presidents, provosts and deans have different visions of where the technical disciplines should reside, unambiguous categorization of universities becomes difficult. As such, we must consult schemes for ranking universities, schemes that frequently say more about the implied assumptions of evaluation criteria than they do about any objective delineation of university categories. Be that as it may, most Canadians are left to the commercially-interested evaluations from the *MacLean's* annual university rankings, which, according to *MacLean's* "is designed to measure each school's ability to preserve excellence in undergraduate education" (*MacLean's*, 30).

MacLean's categorizes universities according to research and the range and levels of programmes they offer. As such, a university offering more PhD programmes than another might be placed in a different category. Aimed at students and parents "shopping" for excellence in undergraduate education, the *MacLean's* ranking divides universities in Canada into three groups:

1) "Medical/Doctoral: Universities with a broad range of PhD programs and research, as well as medical schools";
2) "Comprehensive: Universities with a significant amount of research activity and a wide range of programs--including professional degrees--at the graduate and undergraduate levels"; and
3) "Primarily Undergraduate: "Universities largely focused on undergraduate education, with relatively few graduate programs."

(*MacLean's*, 31)

Rather than categorize universities on the basis of disciplinary strengths or geographic location, the *MacLean's* grouping privileges research—reflected, it believes, by a university's number of graduate programmes—as the central factor delineating types of universities. While the categories are certainly not the final word on how universities in Canada can be categorized, and while academics may find the magazine's criteria for ranking universities dubious, the popularity of the *MacLean's* ranking is significant for how it is shaped by and potentially shapes conceptions of the types of universities in

Canada.[14] University administrators, regardless of whether they welcome or dispute their institution's rating, recognize the importance of the rankings for attracting new students.[15] Whether we like it or not, for many incoming university students across Canada, *MacLean's* has been helping to define university types since its first ranking appeared in 1991.

Although the *MacLean's* categories are partly determined by a tradition of privileging large research-intensive universities over smaller, mainly undergraduate universities, it should not be overlooked that categorizing universities according to the number and breadth of graduate programmes is an evaluation in itself.[16] The *MacLean's* categorization implies a hierarchy of universities where those with more graduate programmes and, by implication, with a greater emphasis upon research are valued higher in the larger scheme of things than universities with a primarily undergraduate focus. Even if we ignore the visually hierarchical arrangement of the category descriptions, where we find PhD in the first category at the top and undergraduate in the last category

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[14] For an interesting critique of the *MacLean's* ranking scheme, see Readings, Bill. *The University in Ruins*. Cambridge, Mass.: Harvard UP, 1996, pp. 24-27.

[15] When designing a promotional pamphlet for the new multimedia programme at McMaster University, the Faculty of Humanities office encouraged the designers to refer to McMaster's *MacLean's* ranking as one of "the most innovative universities in Canada."

[16] In light of the magazine's claim to measure "excellence in undergraduate education," it is perhaps questionable that the criteria used by *MacLean's* for categorizing universities relies so heavily upon graduate programmes.

at the bottom, it remains that the first and second categories use the word "research" in their descriptions while the third does not. Apparently, research is not as valued at universities where there are few graduate programmes, although I am sure that tenure-track faculty at universities classified as "Primarily Undergraduate" would disagree that research is not as important to their work as it is for faculty at "Medical/Doctoral" and "Comprehensive" universities. Nevertheless, the privileging of research-intensive universities comes as no surprise, for we all know that a university's prestige is measured in significant part by the number of tenured faculty, the number of publications its faculty has published by high end publishers and in high end journals, the number of faculty with awards of honour for research, and, of course, the number and value of financial grants received by faculty.[17] Universities with higher prestige attract high-prestige faculty and, in turn, invest faculty with more prestige. Fuelling the system's generation of value are graduate students who understand the importance of academic prestige to their future quest for academic employment.

Significantly, technology does not figure directly in the *MacLean's* categories. But even if technology is absent from the category descriptions, it is not absent from the accompanying articles devoted to the highest ranked universities. In the 1997 ranking, for instance, the short piece describing the University of Toronto as the highest ranked

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[17] For a discussion of the role of "research culture" in the hierarchical organization of universities in the United States, see Gamson, Zelda F. "Stratification of the Academy." *Chalk Lines: The Politics of Work in the Managed University*. Ed. Randy Martin. Durham: Duke UP, 1998, 103-111.

university in the Medical/Doctoral category uses the U of T's high resolution scanning electron microscope metaphorically to signal the high-powered research and, by implication, high-powered undergraduate experience available at the University of Toronto. The description of Simon Fraser University as top ranked in the Comprehensive category focuses somewhat less on technology, although it does devote one of only five paragraphs to SFU's being the headquarters for the national TeleLearning Research Network where it houses the Virtual University. Technology is mentioned only as an aside in the description of Mount Allison as the highest ranked university in the Primarily Undergraduate category. Wiring the campus for the Internet clearly plays second fiddle to Mount A's "intense interaction between staff and students" (*MacLean's*, 38). So, while technology does not directly define university categories, it is implied in the descriptions of the highest ranked institutions. What is most noteworthy about the place of technology in the ranking is how the spectrum of technological focus runs parallel to the hierarchical privileging of research.

Technology and the Academic Hierarchy

The generalized divisions that I have delineated between universities and colleges, between disciplines, and between universities can be imagined as a complex array of intersecting and interdependent axes that, in their arrangements of the value of technology and technical skills training, illustrate the central place of technology within the symbolic and economic hierarchies that structure post-secondary education. For instance, the axis spanning efficient technical skills transfer (colleges) and methodical research (universities) not only intersects with an axis spanning applied research and pure

research. It also connects with divisions of social prestige between university and college programmes—where university degrees generally carry higher symbolic value than college diplomas—and between university professors and college teachers—where the professional intellectual is normally bestowed with higher prestige than the college teacher or part-time instructor.[18] The axis spanning applied and pure research that, in the case of the humanities, also implies an axis between technical skill and critical skill, often reflects a division between levels of research funding, which in turn reflects a hierarchy within the university between those disciplines rich in resources and those struggling to maintain a presence. In other words, those disciplines developing and utilizing technologies valued by granting agencies—themselves arranged in an economic hierarchy reflecting governmental preference for the technical disciplines[19]—receive greater economic funding than those disciplines whose work is non-technological.

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[18] For studies on professional intellectuals, see Bruce Robbins' *Secular Vocations: Intellectuals, Professionalism, Culture* and Evan Watkins' *Work Time: English Departments and the Circulation of Cultural Value*.

[19] A notable exception is *The Orlando Project*, a SSHRCC-funded humanities computing project based at the University of Alberta and University of Guelph. While research in British women's writing is the project's central concern, humanities computing also plays a key role. The project's primary investigators, post-doctoral fellows, and graduate research assistants all receive a great deal of technical skills training in SGML document markup. It remains, however, that as much as the project embraces technology and technical skill,, it prioritizes research.

Greater economic value leads to greater symbolic value as it attracts attention from various agents within the educational field, including professional publications, other research institutes, graduate students, and the news media.

In summary, according to one register, a high emphasis upon technical skills transfer results in low symbolic value while, when combined with a university research programme, the same emphasis results in higher symbolic value. According to another register, a high emphasis upon applied research results in greater economic value than a high emphasis upon pure research, especially where the pure research lacks a technological basis. We don't need to figure all the possible combinations of pedagogical emphasis, technological basis and symbolic and economic value to see that technology is a central figure within the hierarchical organization of post-secondary education and its relationship to social hierarchies. Indeed, the presence or absence of technology is in some ways a defining characteristic of post-secondary education.

What can we take from recognizing the place of technology and technological practice in defining educational, social, and economic value? In the web of intersecting axes, we find that, whenever the humanities and technological practice inhabit the same axis, they are positioned at opposing ends. Intellectual skill is opposed to technological skill, research is opposed to skills transfer, mind is opposed to body, theory is opposed to practice, pure is opposed to applied. Notice that these oppositions reflect social divisions between blue collar (manual labour, technical skill) and white collar (intellectual labour, information management). In many ways, the humanities helps to maintain social divisions in its privileging of theory and resistance to practice. To include technological practice within the scope of the humanities would not only represent a radical shift in its

conceptions of theory and practice. It might also help to blur the lines between collar colours and other social divisions, bringing theory to practice and practice to theory.

Although a focus on the current structures of post-secondary education can help us speculate on how technological practice could lead to radical epistemological shifts in the humanities, we could build a far richer environment for speculation by tracing the historical development of the divisions we see today. In the next section, therefore, I will describe the history of the divide between humanities and technological practice, first by focusing on key historical moments when the humanities and the sciences were in competition for pedagogic legitimacy, and second by examining the continuation of this tradition into current pessimistic criticism of computer technology in the humanities.

The Liberal Education: Splitting Intellectual from Technological Skill

A history of the divide between intellectual and technical skill could reach back as far Socrates, Plato, and Aristotle, who distrusted *techne*, or the practical arts and crafts, as inferior and potentially dangerous to philosophical knowledge. But for our purposes, we need to look no further than the nineteenth century to find the modern origins of the split between intellectual skill and technical skill as it has been institutionalized in post-secondary education.[20] Wilhelm von Humboldt's research-led and nationalist-focused University of Berlin (est. 1810) did more to shape the North American university than

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[20] Although my discussion focuses mainly upon post-secondary education in Canada, the history I chart reaches to Britain and the United States, both of which influenced the form of post-secondary education in Canada.

any other nineteenth-century model. In Humboldt's university, philosophy "was the major discipline entrusted by the nation-state with the task of reflecting on cultural identity" (Readings, 70). But it is not until the centre of culture in the university begins to shift from philosophy to literature that the split between literary and scientific culture develops, "For the literary is opposed to the scientific in a way philosophy is not" (Readings, 70). It is during this shift and beyond that we find stresses between the humanities and the sciences erupting into sometimes heated battles for academic legitimacy.

Perhaps as important as Humboldt to the Anglo-American conception of the humanities (the liberal arts), John Henry Cardinal Newman defines what most humanities scholars would recognize as their own idea of a humanities education in *The Idea of the University*.[21] For Newman, a liberal arts education is based upon the pursuit of knowledge for its own sake, a knowledge that is not overly focused on a particular subject or skill, but that is a more generalized cultural knowledge achieved through study. In a liberal education, according to Newman, the intellect is not "formed or sacrificed to some particular or accidental purpose, some specific trade or profession, or study of science"; instead, it is "disciplined for its own sake, for the perception of its own proper object, and for its own highest culture" (Newman, 152). Newman opposes utility as the guiding principle of education. Indeed, he argues that the proper focus of a liberal education is not "some particular and narrow end" that "teach[es] us definitely how to

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[21] The nine discourses comprising *The Idea of a University* were first delivered in Dublin, Ireland in 1852.

advance our manufacturers, or to improve our lands, or to better our civil economy" or that "at once make[s] this man a lawyer, that an engineer, and that a surgeon" or that "lead[s] to discoveries in chemistry, astronomy, geology, magnetism, and science of every kind" (Newman, 153). The disciplines we find in today's faculties of engineering, law, commerce, medicine, and science are not included in Newman's notion of a liberal education because they focus too narrowly on particular and often market-based skill sets.

Newman's definition of a liberal education rests upon an opposition between intellectual culture on the one hand and technology and technical skill on the other: "You see, then, here are two methods of Education; the end of the one is to be philosophical, of the other to be mechanical" (Newman, 112). Or as Bill Readings puts it, "liberal education positions knowledge as its own end, against the mechanical specter of technology" (Readings, 75). The point I wish to emphasize here is that Newman's idea of the liberal arts is defined specifically as not technological, as opposed to utility, industrialism, and particularized practice.

Newman's privileging of the liberal arts over the sciences was not met with universal praise by scientists who sought to reform education through a focus upon science. In T. H. Huxley's 1880 address at the opening of the Science College in Birmingham, where there would be no "mere literary instruction and education" (Arnold, *LS*, 80), Huxley disagrees with Newman's privileging of the liberal arts over the technical disciplines, arguing instead that "an exclusively scientific education is at least as effectual as an exclusively literary education" (Huxley, 13-14). In 1881, Matthew Arnold replies

to Huxley with "Literature and Science,"[22] where he objects to Huxley's claim that Arnoldian culture is merely the study of *belles letters*, that its subject does not include anything but fiction and poetry, or "a smattering of Greek and Latin and other ornamental things" (Arnold, *LS*, 86). In response, Arnold argues that the study of scientific documents is just as important as the study of a nation's fiction to the endeavour of building a "sufficiently broad and deep foundation for that criticism of life, that knowledge of ourselves and the world, which constitutes culture" (Arnold, *LS*, 84). But, according to Arnold, "those who are for giving to natural knowledge, as they call it, the chief place in the education of the majority of mankind, leave one important thing out of their account: the constitution of human nature" (Arnold, *LS*, 100-01). For Arnold, the instinctive drive for intellect and knowledge demands building relationships between facts to "enumerate the powers which go to the building up of human life ... the power of conduct, the power of intellect and knowledge, the power of beauty, and the power of social life and manners" (Arnold, *LS*, 101).

Although Arnold's concept of culture does not exclude science, it does require that the study of science include the "study of perfection" (Arnold, *CA*, 3), which, in *Culture and Anarchy*, he describes as "an inward condition of the mind and spirit ... at variance with the mechanical and material civilization" (Arnold, *CA*, 38). Like the accumulation of wealth and material goods, the accumulation of scientific "pieces of knowledge" (Arnold, *LS*, 103) as an end in itself is mere mechanics unless it is

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[22] Arnold's "Literature and Science" lecture was first given as the Rede Lecture at Cambridge University and then redelivered during his American lecture tour of 1883.

intellectualized, humanized, and brought to bear upon the quest for intellectual and spiritual perfection. In Arnold's view, the quest for scientific knowledge builds lists of facts; the quest for culture builds universally human connections. For Arnold, culture is fundamentally opposed to a scientific education associated with the materialism of industrial greed.

A half century later, F. R. Leavis picks up on Arnold's concept of a cultural education. Leavis believed that positioning literary study at the centre of the university could heal society's fragmentation, represented, as Bill Readings summarizes, "by the mechanical specializations of American campus universities, in which knowledge is a profession, an autonomous and esoteric pursuit with no immediate connection to culture as a whole" (Readings, 81). Leavis's nostalgia for the Arnoldian conception of culture is powerfully evident in his highly charged public argument with C.P. Snow, who argues in *The Two Cultures and the Scientific Revolution* that "the intellectual life of the whole of western society is increasingly being split into two polar groups," the "literary intellectuals" and the "scientists" (Snow, 11). Snow claims that the English education system, which he compares unfavourably to the US, the USSR and Sweden, has been compromised by an historical resistance to science by "intellectuals" (Snow, 11). His answer to this anti-scientific bias is the urgent inclusion of the sciences in all levels of education so that a basic understanding of scientific laws and of applied scientific knowledge is as common to the educated individual as a basic understanding of Shakespeare's greatness. For Snow, the material wealth of the nation and the happiness of its citizens depends upon science.

In a series of heated responses to *The Two Cultures*, Leavis attacks Snow's concept of "two cultures" as ignorant of the true meaning of culture. Leavis insists that there is only one true culture, fostered only by the literary study of tradition and aimed at the general improvement of the human mind and spirit. To "talk of *two* ... is to use an essential term with obviously disqualifying irresponsibility" says Leavis in a snobbish tone typical of his responses to Snow (Leavis, 14). For Leavis, as for Arnold, true culture is essentially opposed to the "great impoverishment of life ... that, ironically, accompanies the technological advance and the rising standard of living" (Leavis 13). "What we need, and shall continue to need," he argues, "is something with the livingness of the deepest vital instinct; as intelligence, a power—rooted, strong in experience, and supremely human—of creative response to the new challenges of time; something that is alien to both of Snow's cultures" (Leavis, 22). As vague as Leavis is here, he argues that the human need for intellectual and spiritual growth must defend itself against the misguided belief in material wealth as the true end of scientific study and technological advancement.

Arguing for the fortification of liberal education with a focus upon literary criticism, Leavis plays intellectual advancement against the material advancement he finds in the technologically and mechanically obsessed society spanning the late 1930s through the 1960s. Like Newman and Arnold before him, Leavis privileges the intellectual over the material and physical as the single and proper aim of university education, and as the only answer to saving society from its own technological destruction. To borrow the cliché, Leavis places mind over matter.

It is worth pausing for a moment to consider the context in which Leavis launches his critique. For, while Newman and Arnold also react against their increasingly materialistic society, Leavis' world was transformed by a far different set of scientific and technological advances, ranging from the transistor radio to television, from radar to the atomic bomb. Indeed, World War II bankrolled tremendous expansion in manufacturing and in defense-based scientific research, and it also demonstrated, through Nazi death camps and the atomic bomb, the power of science and technology to be anti-humanistic. Against this background, Leavis claims that scientific and technological research, if they are to be justifiable disciplines within the university, must be built upon the only legitimate academic practice, literary criticism.

Regardless of disagreements over definitions of culture and the primary focus of education, Newman, Arnold, Huxley, Snow, and Leavis all share a general understanding of the humanities and the sciences as essentially divided from each other. For Newman, Arnold, and Leavis, culture is an historically based study of national literatures that should form the heart of a nation's education system, while for Huxley and Snow, education in scientific laws and their application to technological progress are necessary for the welfare of the state. Although each has the goal of a well-educated nation, each defines itself in some way against the other. The study of culture, based upon intellectualizing history and tradition, is a defense against what it sees as the blind materialistic progressivism of science and technology, which emphasizes the present and future through a belief in scientific and technological progress over what is sees as backward-looking historical tradition.

Escaping the Frame: The Problem of Art

The historical opposition between the liberal arts and the sciences, however, is not so cleanly cut as this tradition of disagreement would suggest. Indeed, I hope that my selective focus upon particular figures and documents signals that, at some historical moments, the boundaries became stressed enough to warrant calls for divisional reinforcement. Over this same period of time, challenges to the boundaries defining the liberal arts and the sciences sprang from a variety of sources.[23] One seemingly unlikely source was the fine arts. As Howard Singerman explains in *Art Subjects: Making Artists in the American University*, the history of the fine arts' quest for academic legitimacy is marked by difficulties of definition within the binarized system defining the liberal arts and the sciences, especially in their differing approaches to applied practice. In his 1916 presidential address to the College Art Association, John Pickard calls for "Art for higher education and higher education for artists" (Pickard, 15). The problem Pickard faced, however, was that the membership of the CAA included those who studied art history, those who created art, and those who did both. For art to be accepted within the liberal arts, however, "it had to be separated from vocationalism and … from art practice and professional studio training" (Singerman, 15). In other words, it needed to fit within the liberal arts mission to study culture broadly rather than to specialize in particular practices, and thereby contribute to the social fragmentation identified by scholars of the liberal arts.

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[23] For a discussion of the challenge posed by composition and rhetoric in English, see Evan Watkins' *Work Time*, especially pp. 77 - 141.

The answer for some was to relegate artistic practice to instructional lab time, but only as a supplement to classes in the history of art and technique. For Alice Van Vechten Brown at Wellesley, this meant that "no separate courses are offered in painting, drawing, modeling or design and no college credit is given for this practical work except as it is taken in conjunction with courses in Art History and very closely related to such courses" (quoted in Singerman, 15). In this way, artistic practice could be academically legitimized through its connection via art history to the liberal arts' focus on the intellectual production of culture (Singerman, 16).

Since Brown's approach needed a close connection to tradition, the artistic practices it favoured were drawing, painting, and sculpture, or what we normally call the fine arts. Yet, in the post-war era, the name "visual arts" began to find its way into the university and, in some institutions, to replace "fine arts" as a disciplinary designator. The name change is significant, for it reveals a politics of art instruction in its attempt to "recast the hierarchy between the fine and industrial arts written in the organization of the fine arts" (Singerman, 69). In 1956, the Harvard Committee on the Visual Arts recommended that Harvard change the name of its fine arts programme to visual arts because the "distinction between fine arts, applied arts, and functional arts should be avoided in favor of their common denominator, contemporary design" (quoted in Singerman, 70). In this way, a greater variety of artistic practices could be included within the university, including practices associated with technological industry. The adoption of "visual arts," therefore, introduced scientific methodology to art in particular and, as a component of the liberal arts, brought science closer to the liberal arts in general.

This expansion of artistic practice problematized the academic definition of art. First of all, it disrupted the place of art within the liberal arts, because unlike fine art, which focused on historical tradition and divided itself from the industrial, vocational, and design arts, visual art followed the sciences in its focus upon the present and the future, stressing technical practice in conjunction with the intellectual. Second, and perhaps even more significant, the alignment of the visual arts with the sciences added elements of inspiration and creativity to the sciences, which, as we have seen, were frequently cast in opposition to the liberal arts as uninspired, uncreative, and dehumanizing. Some supporters of the newly inclusive visual arts compared the scientist and the artist, one in a lab, the other in a studio, but both experimenting and creating. For instance, one member of Harvard's Committee, notably a scientist, stated, "Successful experimentation in science is permeated with qualities of intuition and imagination that make it a creative experience. It involves the same interplay of head and hand that goes into the production of a work of art. Just as the scientist has found his place within the university.... just as his laboratory has become academically respectable, so the artist and the studio, given time and opportunity, should find their places" (quoted in Singerman, 72). Or as Gyorgy Kepes states in his influential *Language of Vision*, "As contemporary scientists are struggling to liberate the inexhaustible energy of the atom, the painters of our day must liberate the inexhaustible energy reservoir of visual associations" (Kepes, 201).

This brief modern history of art in the university illustrates the inherent difficulty of maintaining impermeable divisions between the liberal arts and the sciences when applied practice is added to the mix. It also ruffles the essentialism of the divide between

culture and science, revealing a cross-fertilization where the liberal arts and the sciences meet. If the separate faculties can indeed blend, then is their separation in the university based upon essential differences or socially constructed ones? This is a key question when it comes to the place of multimedia in the humanities, where technology and technical practice again raise "the mechanical specter of technology." I will discuss this question in more detail later.

In some ways, this history of art also helps to explain the humanities' general distrust of the visual that Barbara Maria Stafford criticizes in *Good Looking: Essays on the Virtue of Images*, in which she claims that "a distorted hierarchy ranking the importance of reading above that of seeing remains anachronistically in place" (Stafford, 4). Addressing the opposition of pure research to applied practice, Stafford argues that "we must finally renounce the institutionalized notion that only the 'pure' study of anything, including images, ... is admirable" and that "serious consideration should be given to the proposition that a great part of our most meaningful inquiry goes on precisely because it gives thought to practical ends" (Stafford 14). But Stafford's is still only a lone voice against the crowd that continues to support the anachronistic hierarchy that ranks mind over matter.

New Media Technology in the Humanities

Even though today's university in Canada, the US, and the UK owes much to the historical development of the faculties and disciplines, it would be an inaccuracy to apply Stafford's remarks to the divisions between the humanities and the sciences that Leavis and Snow experienced. For, as she herself notes, the hierarchical ranking is anachronistic

today, although it wasn't when Leavis and Snow were writing. Stafford's proposal *is* applicable to today's university because technology can no longer be positioned unquestioningly outside of the humanities as some external Other dangerous to the humanities quest for Arnoldian perfection. It has entered the field in a myriad of ways, the most visible, influential, and controversial coming in the form of the computer. The "mechanical specter of technology" is now in our midst.

While this new technological reality has not stopped the condemnation of its existence, it has changed the terms of the debate through redirected attention on computerization as the enemy of culture. Now, humanities critics of technology focus on digitized media and computer-aided education in their criticisms against the inclusion of technology and technological practice in the humanities. For some, the advent of digitized media is just the next step in the dumbing down of culture and ultimately means the death of print, once the foundation of humanist research and scholarship. For others, computing in the university means the commodification and automation of education. Now, instead of battling the other half of the campus, neo-Luddite humanist scholars face their own colleagues and university administrators as they watch the very material of their research seemingly slip from their grasp.

Except for its focus upon media types, the critique of digitized media within the humanities continues, for the most part, in the nostalgic tradition of humanistic opposition to science and technology that I have been describing. A representative and especially popular example comes from Sven Birkerts, who, in *The Gutenberg Elegies: The Fate of Reading in an Electronic Age*, denounces the efficiency-oriented nature of computer technology as "anticontextual" and, therefore, as a threat to the historically-

minded, deep knowledge promoted by Newman and others as intrinsic to a liberal education (Birkerts 135-38).

Following traditional lines, Birkerts bases his argument upon Wilhelm Dilthey's split between the "natural sciences" (*Naturwissenschaften*) and the "sciences of culture" (*Geisteswissenschaften*), an articulation of the division between the humanities and sciences (Birkerts, 135). While Birkerts does not claim that the only legitimate form of scholarship is literary study or culture, he does keep science and the technical disciplines in their own, well-defined, and delimited space apart from the humanities. But what is striking about Birkerts' approach is how he maps an apparently incompatible division between print culture and digital culture onto the division between the humanities and the sciences. The sciences, he argues, are "more hospitable to the new video and computer procedures … Indeed, any discipline where knowledge is sought *for its application rather than for itself* could only profit from the implementation of these technologies" (my emphasis, Birkerts, 135). Echoing Newman, Arnold, and Leavis, Birkerts states that "Knowledge, certainly in the humanities, is not a straightforward matter of access, of conquest via the ingestion of data" (as if knowledge in the sciences is only about "access" and "conquest"!). Knowledge for the humanities is a means "less to instrumental application than to something more nebulous: understanding." For Birkerts, humanists contribute to an expanding narrative that relies upon data, but only insofar as "they help us to deepen and extend that narrative" (Birkerts 136). In summary, Birkerts contends that it is natural and good to use computer technology in scientific disciplines, where the instrumental application of knowledge is improved by fast access to vast amounts of information. On the other hand, it is neither natural nor good to use computer technology

in the humanities, where speed and quantity alone do not convert information to deep knowledge. For Birkerts, then, computer technology is antagonistic to the traditional aims of humanistic research for it renders "the field of knowledge ... as a lateral and synchronic enterprise susceptible to collage, not as a depth phenomenon" (Birkerts 137).

Birkerts' dichotomy between the diachronic knowledge of the humanities (knowledge as depth) and the synchronic knowledge of the sciences (knowledge as latitude) is not incompatible with the divisions between internal and external, intellectualism and materialism, mind and matter that we have seen in Newman, Arnold, and Leavis. Birkerts uses the visual metaphor of depth and surface as his central image for describing what he sees as the essential division between "the order of print" and the "electronic order." Lamenting the inevitable death of the book, he compares print with electronic media, beginning with print:

> Print ... posits a time axis; the turning of pages, not to mention the vertical descent down the page, is a forward-moving succession, with earlier contents at every point serving as a ground for what follows. ... The physical arrangements of print are in accord with our traditional sense of history. Materials are layered; they lend themselves to rereading and to sustained attention. (Birkerts, 122)

The electronic order, by contrast, is shallow:

> With visual media (television, projected graphs, highlighted "bullets") impression and image take precedence over logic and concept, and detail and linear sequentiality are sacrificed. The pace is rapid, driven by jump-cut increments, and the basic movement is laterally associative rather than vertically cumulative. ... Further, the visual and nonvisual technology in every way encourages in the

> user a heightened and ever-changing awareness of the present. It works against historical perception, which must depend on the inimical notions of logic and sequential succession. (Birkerts, 122-23)

Where print is inherently logical, cumulative, and historical, new media technologies, especially those that are visually based, are inherently associative, lateral, and non-historical. Birkerts places the divisions between the humanities and the sciences in a parallel arrangement with divisions between print and digital, diachronic and synchronic, deep and shallow. For Birkerts, all new media technology is fundamentally antagonistic to the humanist belief in "the natural balance between the individual and his [*sic*] society. ... Every technological development now wrenches us further out of scale, mocks further the Renaissance ideal that influenced us for so long" (Birkerts, 181). In short, new media technologies represent the antithesis to humanistic study. Making matters worse, they combine with postmodernism's attack against the liberal arts' foundation upon the grand narrative of a common culture defined by an historically defined canon. In Birkerts' words, digitization has "helped to sink the humanistic culture" (Birkerts, 182).

Birkerts' binary arrangement, which finds its historical precedent in the traditional split between the sciences and the humanities, rests on what Andrew Feenberg calls "the illusion of essential conflict" between culture and technology (Feenberg, 13). Part of the illusion comes from Birkerts' failure to recognize that, although seemingly transparent, print is itself a technology. From the days of Gutenberg's press to today's laser output, print has been and continues to be a mechanical means for increasing the efficiency of reproducing and distributing printed text. The central technological difference between the printing processes of yesterday and today is that today we increasingly rely upon the

computer during all phases of production and distribution. This has meant increased access to printing technologies and, by implication, the potential for greater democracy. If anything, print stands to benefit from computerization as the process of circulation is made more efficient by quicker and less expensive document preparation, computerized inventory systems, and the recent spread of online bookstores like Amazon.com and Chapter.com.[24] Again, access to printed materials is increased through computerization. Computer technology in the book industry hardly threatens to "sink the humanistic culture," unless by "humanistic culture" we are meant to include the frustrations of inefficient circulation and limited access to libraries and bookstores.

The remainder of the illusion rests upon the assumption that new media technologies can amount to no more than a threat to books, that all possible applications of new media technologies lead to the same unfortunate conclusion: the end of print and, by extension, the end of humanistic culture. The essentialism of this binary between technology and the humanities prevents Birkerts from envisioning how new media technologies could be used to create new forms of expression and representation, forms that might open avenues of exploration common to traditional humanistic ideals. Isn't it possible that a multimedia composition could work towards rather than against building a "natural balance between the individual and his society"? Surely, a web site like the Perseus Project is an aid rather than a hindrance to humanist researchers in their quest to

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[24] See Nunberg, Geoffrey. "Farewell to the Information Age." *The Future of the Book.* Ed. Geoffrey Nunberg. Berkeley: U California P, 1996, pp. 103-138. For Amazon.com, go to http://www.amazon.com . For Chapters.com go to http://www.chapters.com .

understand cultural traditions?[25] And isn't hypertext fiction merely a new genre of narrative that just happens to rely upon the computer? The fact that most original hypertext fiction challenges what it sees as the traditional borders of the text—borders between texts, authors, and the author and reader—does not mean that hypertext is *essentially* postmodern or anti-humanistic. Hypertext is more frequently adopted for traditional uses. Indeed, most hypertext we find on the world wide web is organized more like a book with a table of contents than a complex web of purposely disjointed links. Consider the hypertext version of Jane Austen's *Pride and Prejudice* at The Republic of Pemberley.[26] It uses hypertext not to deconstruct the novel, but to give users a means for navigating the text, whether between chapters or to scholarly notes. Most academic web sites rely upon hypertext to organize data, not to confuse the reader. The same is true of most personal web sites. And as commercial interests increasingly adopt the web as an advertising and sales medium, hypertext will continue to emulate the organizational traditions of print rather than seek to confuse readers for postmodernist aesthetic effect. What these examples show is that, even if new media technologies are used to create postmodernist work, they are not essentially postmodern.

Birkerts' essentialism fails to recognize that the technology he fears is defined not merely by some set of inherent qualities or features that exist within technologies. Technology is also defined by its social context, by how technologies are used, experienced, and understood by people. In other words, technology is contingent upon

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[25] See http://www.perseus.tufts.edu/ .

[26] See http://www.pemberley.com/janeinfo/pridprej.html .

culture rather than separate from it. It is a mix of mechanism and meaning. Birkerts' essentialism is, in many ways, a continuation of the fundamental division between the sciences and the humanities informing the notions of culture we find in Newman, Arnold and Leavis, with the important difference that Birkerts focuses upon new media technologies. They all share the belief that science and technology threaten humanistic meaning at a fundamental level.

Computerized Education

Critics of computerized education are also susceptible to an essentialist understanding of technology, although they ostensibly focus upon the application of technology, its use within social settings, rather than its essence. The issue for them is not so much the replacement of one medium and its associated form of knowing with another, although they express legitimate concern that computer-automated education may not be as effective as face-to-face education. They isolate issues of power relations, where the computerized commodification of education is forced upon teachers by administrators who prioritize financial capital over intellectual advancement for the sake of knowledge-building. Their concern over the hegemonic social application of technology tends to cast technology as fundamentally about oppressive power and to ignore applications that might promote the traditions of the intellectual enterprise. Paradoxically, this lack of imaginative insight into positive educational applications of technology potentially obscures their own role in maintaining the very power relations they critique.

The central thread of the argument against instructional technology contends that computerization helps to commodify education. David F. Noble, an outspoken critic of

computers in education, uses phrases like "the age of automation" and "the new age of higher education" to describe what he sees as a fundamental shift in the paradigms of post-secondary education (Noble, 2 & 3). Like others, he finds that the university, which once focused upon intellectual activity as contributing to a general intellectual enterprise and to the welfare of the nation, now views intellectual activity as a commodity with potential financial value. He sees this paradigmatic shift as a two step process, beginning with the "systematic conversion of intellectual activity into intellectual capital and, hence, intellectual property" and progressing to the "commoditization of the educational function of the university" (Noble, 3). It is in the second stage where we find his most direct criticism of computers in education, for the commodities to be sold are "copyrighted videos, courseware, CD-ROMs, and Web sites" (Noble, 3).

In a similar vein, Gary Rhoades and Sheila Slaughter argue that faculty is "technologically challenged," that the days of full-time, tenured faculty are threatened by the conversion of curriculum from class-based transmission to computerized delivery (Rhoades and Slaughter, 47). Noble, Rhoades and Slaughter maintain that the push for instructional technology comes from administration, and that this represents a hostile move to break the back of tenure. "It is another means by which managers can bypass faculty's bailiwick, the curriculum," argues Rhoades and Slaughter (Rhoades and Slaughter, 47). "It is no accident," Noble contends, "that the high-tech transformation of higher education is being initiated and implemented from the top down, either without any student and faculty involvement in the decision-making or despite it" (Noble, 2). Commoditizing the curriculum places ownership and control in the hands of administrators, removing faculty from the equation except for their participation in the

initial curricular design. In this way, instructional technology will make instructors redundant, providing administration with a new tool to cut back on fulltime, tenured faculty in exchange for computerized and commoditized learning modules maintained by seemingly less expensive, or at least more easily managed, technical staff.

These are valid concerns, and they need to be addressed more frequently in faculty contracts as the new efficiency-minded administrative mode sweeps academe. According to Rhoades and Slaughter, in the United States, "only a little over one-third of faculty contracts have provisions regarding instructional technology" (Rhoades and Slaughter, 47). And, as we learn from Noble's own experience at York University and his description of UCLA's Instructional Enhancement Initiative, some administrations do indeed see instructional technology as a means to streamlining the education process, to increasing the efficiency of product delivery. It's a battle between pedagogic modes, where a system of tenured faculty that promotes research and the building of knowledge for the sake of knowledge is vulnerable to a system that sees knowledge as an exploitable commodity that adheres to rules of efficiency. According to these rules, the tenure system is expensive and inefficient. The "ideal college/university for managers is one without permanent faculty, a virtual university that is not only without walls but also without full-time, tenured faculty" (Rhoades and Slaughter, 47).

It is hard to argue with these criticisms of the power of improperly managed technology to destroy what we as educators value about knowledge acquisition. Re-envisioning knowledge within the terms of efficiency is certainly a degradation of the practice of creating and transmitting meaning. Applying notions of economic or scientific efficiency to knowledge is, to borrow from the traditions of the humanities, an

attack upon culture, which cannot be reduced to mere efficiencies. In many ways, efficiency-minded pedagogic administration exemplifies Jacques Ellul's thesis of the predominance of a "discourse of efficiency"[26] where the psychological, complexly emotional, and spiritual elements of culture are sacrificed to a society-wide belief in the value of technological efficiency.[27] This discourse is worth resisting in the university.

Yet, the opposition to technological efficiency within academe does not offer alternative means for technological adoption. Instead, it imagines instructional technology as nothing more than a means to the end of face-to-face education. Once again, we find technology viewed through the limiting lens of essentialism. Rather than challenge the notion of technology as essentially a means to greater efficiency, rather than suggest that we develop competing understandings of technology that might enhance research and education, Noble, Rhoades and Slaughter accept that instructional technology can only be understood in the terms of its application by university administrations. Because they see instructional technology only within the framework of power, they allow it no other application and are thereby doomed to suffer under its rule in whatever form it may take. So, while they recognize that power can be exercised in the application of technology, that it works within a social context, they do not take the next step and imagine how that power can be resisted or transformed through alternative applications of technology. Their only response to instructional technology is to reject it.

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[27] See Ellul, Jacques. *The Technological Society*. New York: Vintage Books, 1964.

Technological Essentialism

The understanding of science and technology as essentially anti-humanistic fits Andrew Feenberg's description of technological essentialism: "Essentialism holds that technology reduces everything to functions and raw materials. Goals oriented technological practices replace practices which embody a human meaning. Efficiency sweeps away all other norms and determines an autonomous process of technological development. From this standpoint any attempt to infuse the technological with meaning appears as external interference in a rational field of its own logic and laws. Yet rational though it may be, technology engulfs its creators, threatening both spiritual and material survival" (Feenberg, viii). Technological essentialism, as Feenberg describes it, resists culturally meaningful, humanitarian technological development.

If technology is in fact essentially antagonistic to meaning, and if the recent explosion in communications technology signifies that digital culture is overcoming print culture, then the humanities faces a monumental challenge if it hopes to maintain more than an ancillary role in post-secondary education or in society in general. Neil Postman's belief that we need to think more carefully about which technologies we adopt and how we adopt them offers a line of hope that more pessimistic views cannot support.[28] But neither Postman nor other pessimistic critics of technology can even consider the option of including significant technological practice in the pursuit of cultural meaning, for such a strategy contradicts the very nature of their critiques.

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[28] See Postman, Neil. *Technopoly: the Surrender of Culture to Technology*. New York: Vintage Books, 1993.

If we think about technologies as cultural artefacts whose design, production, and consumption are contingent upon social context, then we can open a space for technology and technological practice in the humanities without the fear of threatening meaning. But are technologies culturally contingent? Or do they, as the essentialist thesis assumes, develop within an "autonomous process," separate from and antagonistic to cultural meaning? The Internet provides a telling example of how the development of a technology operates within culture rather than within a separate arena of efficiency. It was originally developed within an efficiency-minded militaristic framework with the intention of providing uninterruptible data transfer and defence communications. Since the Internet's early development in 1960s and 1970s, however, it has evolved through social practice, first into a scholarly communications network and then into a medium for mass communication. E-mail has become a space for dialog, web sites a space for dynamic information and highly stylized communication. And now, new audio and video technologies will widen the social application of the net to include new means of time-based representation. For users of e-mail and builders of web sites, the Internet is not only about efficient communications. It is also about expression, meaning, and participation in the human community. No longer understood as only a system for efficient data transfer, the web is now also seen as a social space. Social practice shaped and continues to shape the Internet; indeed, the Internet *is* social practice.

If the humanities hopes to save culture from technology's destructiveness, then it needs to affect technological design through direct practice. This is already happening as scholars in humanities computing and multimedia have been building digital works that are both intellectual and creative and that offer models for future academic work. For

instance, the design of the XML standard, shared by academics and corporate interests, gives scholars a highly extensible environment in which to plan, conduct, present, and share scholarship. The effect of presenting primary and secondary texts in XML not only speeds up the process of some forms of research—a significant benefit in itself. As a related effect, it also may lead us to think differently about the works we study by allowing us to see relationships within and between cultural works and their social context that we have been unable to see or document as efficiently without the mechanization of computerized search and tagging procedures. In addition, if one scholar's research of a digitized work can be saved and shared with other scholars in its tagged form, then we will be in a stronger position to build upon scholarship or at least to lessen the need for re-performing past scholarship. As such, tagged research may also give us the ability to analyse methodology more closely and, ultimately, lead to new questions about methodology itself. I will return to this point in the next chapter where I consider document markup and research longevity.

Where some scholars may question the value of preparing documents for digital delivery, seeing it as mechanical rather than intellectual, such criticism fails to recognize that developing tagging schemes and then applying them to documents is indeed an intellectual activity that not only adds the potential for scholarship, but also demonstrates scholarship. Projects such as the Orlando Project at the University of Alberta, the Perseus Project at Tufts University, and the Brown Women Writers Project all exemplify the intellectual creativity that technological practice brings to academic scholarship. The act of tagging documents for structure, content, or hypertextual links is an intellectual act in itself, as text markup demands that one see the logic of tag usage and the connections

between texts before tags can even be inserted. This is most evident in tagging for content where decisions about what gets tagged and what does not essentially leads to a reading of the work being prepared. In other words, document markup is a form of interpretation that provides intellectual insight.

Unfortunately, the tendency in the humanities has been to undervalue technological practice as non-intellectual, something that I have argued here and in the following pages is misguided and deeply entwined within binarized assumptions about technology and the humanities. To change these dominant understandings which organize the relationships between the humanities and technology, we must scrutinize the binary opposition between intellectual knowledge and technical knowledge that has come to define what we mean by the humanities and the technical disciplines. We need to challenge assumptions that technological skill is too closely connected to the mechanized and automated, that it does not include sufficient intellectual and creative skill, and that it is inferior and even dangerous to the enriched intellectual pursuits of the humanities. Once we do this, I believe that the notion of embracing technological practice will emerge not only as a necessary defense against the leveling aspect of certain technological practices. It will also offer a more effective way of actively contributing to ethical, democratically-inspired technological development.

Chapter 2

Marketing the Humanities: Multimedia and Academic Capitalism in the Field of Humanities Production

Prologue

In the spring of 1998, the Ontario Ministry of Education and Training announced the Access to Opportunities Program (ATOP), a $150 million initiative with the goal "to double entry-level enrolments at universities in computer science and high-demand fields of engineering by September 2000."[29] Later that year, I joined a small group of faculty members at McMaster University who, hoping to qualify under the terms of ATOP, proposed to develop a new BA programme in Multimedia in the Faculty of Humanities. Even though the proposal eventually met with success (the programme officially began in September, 1999), it also met with significant internal resistance.

The notion of computing in the humanities was nothing new to McMaster, which opened its Humanities Computing Centre in 1986 and taught its first credit course in humanities computing in 1995. But the idea of a full-fledged degree programme in multimedia seemed harder to swallow, perhaps because it meant legitimizing multimedia as a discipline of study, perhaps because it implied opening the humanities to

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[29] See http://www.edu.gov.on.ca/eng/general/postsec/atop/info.html#atop.

professional programmes, or perhaps because it included technological skills training in a faculty focused primarily upon critical skills. More significantly, maybe legitimating multimedia in the humanities signified a surrender to the capital-driven agendas of government and industry. Many faculty members asked, "Why should the humanities offer degrees in an area that is primarily technical and that seemingly prioritizes technological and employable skill? The humanities has never been about technical skills training. That's what computer science and technical colleges are for." Others asked, "Should the humanities bow to external pressures to offer professional programmes that supply industry with a workforce rather than focus on the liberal arts tradition of a curiosity-based quest for knowledge?"

While industry and government were attracted by the potential employability of our programme's graduates, members of our own faculty distrusted what they perceived to be an over-emphasis on technology and employability. Even after reviewing several updated versions of our proposal that stressed the programme's commitment to the traditions of humanities scholarship, some colleagues still wondered why a humanities faculty should support what they assumed belonged in a technical college or trade school. It is as if there was an instinctive distrust of technology in the humanities.

This distrust raises an important and complex question that I began addressing in the previous chapter: What are the assumptions about technology, technical skill, and intellectual skill that underlie the anxieties expressed in these objections to a multimedia programme in the humanities? In the following pages, I will address this and other related questions by exploring why the convergence of technical and intellectual skill in

the broadening practices of information technology represents a threat to the cultural space of the humanities.

Multimedia and the Field of Humanities Production

In the previous chapter, I showed how the modern humanities has, since the nineteenth century, defined itself against science and technology and how it is positioned within the technology-rich hierarchical arrangements of post-secondary education. In this chapter, I will narrow my focus from the broad structures of post-secondary education in general to the narrower organizational structures within the humanities in particular. This narrowing of focus, however, will not ignore the intricate connections between academic hierarchical structures and socio-economic hierarchical structures. Indeed, I hope to illustrate just how intertwined these structures are. Doing so will demonstrate how further hierarchies of symbolic and economic value within the humanities work to privilege the non-technological over the technological and thereby complicate the legitimization of multimedia as an area of humanistic study. The stakes are high, for if multimedia is to gain the status of a legitimate area of humanities research and instruction, then the hierarchies that structure the humanities must be deconstructed and definitions of the humanities as non-technological must be re-imagined.

The humanities works within a complex system of academic distinction in which cultural, symbolic and economic values intersect. Culturally, the humanities acts as a significantly influential agent within a hierarchically organized, dynamically relational system of cultural value, or what Pierre Bourdieu calls the "field of cultural production,"

where participants work to generate, accumulate, and distribute cultural capital.[30] Symbolically, individuals and institutions within the humanities accumulate prestige, or symbolic capital, in relation to their direct contributions to the development and distribution of cultural value. Economically, humanities funding can significantly affect the accumulation of symbolic and cultural capital and *vice versa*, for certain kinds of financial success can be both the result of *and* catalyst for success within the field of humanities production.[31]

Understanding the dynamic and intertwined hierarchies of cultural, symbolic, and economic value that constitute the field of cultural production is key to understanding the place of technology within the humanities, for technology does not operate outside this field, but proves to be a central definitional component of what the field consecrates as legitimate and, therefore, what defines the field itself. Before launching into a focused discussion of technology within the humanities, however, I will pause to lay down some of the theoretical framework Bourdieu provides for arguments I make later in this chapter.

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[30] See Bourdieu, Pierre. *The Field of Cultural Production.* New York: Columbia UP, 1993.

[31] In Canada, financial success in the humanities is measured in part by government funding formulas attached to student enrolment. Admissions figures, however, are often a reflection of the more significant sign of financial and symbolic success: the research grant. The greater the number and value of research grants, the greater the number and academic strength—cultural value—of faculty and students.

Bourdieu and the Field of Humanities Production

In short, Bourdieu defines the field of cultural production as "the system of objective relations between...agents or institutions and as the site of the struggles for the monopoly of the power to consecrate, in which the value of works of art and belief in that value are continuously generated" (Bourdieu, 78). More than any other group in post-secondary education, the humanities has formalized this system so that its *raison d'etre* is precisely the generation of cultural value. It seeks to establish criteria for legitimizing and evaluating cultural production.

An obvious consequence of this system of evaluation is the development of canonical lists of cultural artefacts that represent the most valued examples of cultural production and that form a common basis for scholarly work. Yet, as recent challenges to the canon demonstrate, the criteria that defines good and bad is by no means static.[32] New criteria arise as new perspectives and theoretical paradigms evolve. In general terms, agents representing particular perspectives compete with other agents for legitimacy and the right to consecrate work with value. Over time, the field changes, and new criteria for determining value arise. And, as current debates over the canon illustrate, the very question of evaluation as a practice also arises, or in Bourdieu's words, "the field of restricted production can never be dominated by one orthodoxy without continuously being dominated by the general question of orthodoxy itself, that is, by the

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[32] For an application of Bourdieu to a study of literary canonization, see Guillory, John. *Cultural Capital: The Problem of Literary Canon Formation.* Chicago: U of Chicago P, 1993.

question of the criteria defining the legitimate exercise of a certain type of cultural practice" (Bourdieu, 117). Nowhere has this been more visible recently than in the feminist challenge to the literary canon launched in the 1960s and 70s, which began a widespread reconsideration of canons in general. The exclusion from the canon of non-Caucasian male writers has lead to constant and thriving debate over what is included in the canon and even over the politics of the canon's very existence as a cultural filter. These canon debates exemplify what Bourdieu calls the "struggles for the monopoly of the power to consecrate" value upon cultural works.

Where Bourdieu's theory of cultural production proves most interesting for artistic and scholarly practice is in its contrasting of the field of restricted production with the field of large-scale production. The field of restricted production, which produces cultural goods "destined for a public of producers of cultural goods," defines itself in part against the field of large-scale production, which produces cultural goods "destined for non-producers of cultural goods, 'the public at large'" (Bourdieu, 115). The field of restricted production "develop[s] its own criteria for the evaluation of its products, thus achieving the truly cultural recognition accorded by the peer group whose members are both privileged clients and competitors" while the field of large-scale production "submits to the laws of competition for the conquest of the largest possible market" (Bourdieu, 115). The level of autonomy of a field of restricted production, or its independence from other fields for the generation and distribution of capital, is measured "by the degree to which it is capable of functioning as a specific market, generating a specifically cultural type of scarcity and value irreducible to the economic scarcity and value of the goods in question" (Bourdieu, 117). It is the level of autonomy of the field

of humanities production, I will argue, that the legitimization of technological practice within the humanities seemingly threatens.

Although Bourdieu claims at one point that his use of the term "cultural" is "shorthand for 'intellectual, artistic, and scientific,'" his reference inevitably comes to rest upon artistic production, especially painting, literature, and music.[33] This tendency to focus on artistic practice proves troublesome, for as close in structure as artistic production and academic intellectual production are as restricted fields of production—indeed, they are both sub-fields in the broader field of cultural production—they are not exact analogies and so should be treated differently. To this end, I will use the phrase "the field of humanities production" to refer to the field of academic intellectual production common to faculties of humanities, which includes artistic production, but which more frequently means evaluations of artistic production, evaluations of evaluations, strategies for evaluation, and criteria for evaluation, commonly understood as interpretation, criticism, methodology, and theory. Whether exhibitions of artistic work, interpretations of historical artefacts, literary critiques of Shakespeare, or theoretical musings upon the postmodern subject, humanist scholarship is evaluated within a system of agents and institutions in competition for the "monopoly of the power to consecrate" value upon works of art and scholarship.

Importantly, the agents who consecrate academic production are themselves producers of the same kind of cultural goods, meaning that the field of humanities

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[33] This is especially true in *The Field of Cultural Production* and *The Rules of Art*. See *Homo Academicus* for his treatment of the French post-secondary system.

production is a relatively restricted system; agents produce cultural goods (research) for other producers of the same kind of goods (peers) and consecration of these goods is performed by producers in the field. Scholarly work that is successful within the field of humanities production results in symbolic capital for its producer, who consequently gains greater authority to consecrate value upon other work from the field. Scholarly work that is successful in the field of large-scale production potentially restricts the symbolic capital available to the producer. Indeed, a high level of success within the popular market may result in more than low symbolic return within the field of restricted production. It could also devalue the agent's previously accumulated symbolic capital.

Looking at the humanities from within this framework, we find that the humanities is both an institutional agent and a producer of individual agents (scholars), whose research and teaching influences and is influenced by other agents in the field. Notions of what constitutes legitimate humanities research, including methodology, are in significant part defined by the dominant agents within the field. For example, post-structuralism, post-colonialism, globalization theory, feminism and queer theory—all currently major methodological and theoretical players in the humanities—not only shape a significant quantity of humanities research methodology. They also help to define what we think of as legitimate scholarship. Less dominant agents—small communities of scholars who share a research interest or methodology not valued or considered legitimate by the dominant agents—must compete for legitimacy by defining themselves in relation to other agents in the field. In a field heavily dependent upon government granting agencies, the quest for legitimacy is closely connected to the quest for funding, with the possible consequence that less research is produced, or at least made visible, in

areas devalued by the dominant agents and agencies. Similarly, in an environment with so few new academic positions being filled, minority interest fields are doubly silenced. Since less dominant groups will likely have fewer supporters amongst grant programme designers, on grant committees, and on hiring committees, then the chances for funding, hiring and, by implication, for academic legitimacy, are decreased. In other words, publicly-sponsored economic investments in humanities research are also symbolic investments. They help to increase prestige for researchers within the field and, in turn, increase the likelihood of further economic and symbolic investment. The greater the prestige, the greater the influence upon research, both in its economic and symbolic dimensions.

What role does technology have in the definition of the field of humanities production? In what ways does the presence or absence of technology within the practices of humanities production potentially diminish the autonomy of the field and thereby redefine it? I'll turn to these questions now by arranging my arguments into three sections describing the practices of humanities production. The first section will establish a working definition of practice and consider the place of technological practice in the humanities; the second section will consider the practice of humanities research with a focus upon popular methodologies and practices in humanities computing and their relationship to questions of methodological legitimacy within the field of humanities production; and the third section will consider connections between the practical application of knowledge and the market, and suggest that this example of the movement of cultural goods from the a field of restricted production to field of large-scale

production may not necessarily spell disaster for the humanities. Indeed, it may strengthen its social influence.

Practice

The term "practice" is complex, even when we narrow its definitional context to the humanities. For the purposes of this study, there are two meanings worth singling out: first, "practice" signifies a profession, as in the act of practicing a profession, and second, it signifies the application of knowledge or theory, as in putting a theory into practice. These meanings are closely related in that a professional practice is based upon the application of specialized knowledge within a theoretical framework. Medical practice is founded upon medical knowledge and theories of health and well-being; legal practice is founded upon legal knowledge and theories of justice. This same model can be applied to academic practice in general, which is founded upon bodies of knowledge and their associated theories of education, knowledge, democracy, etc. These theories are put into practice by professional scholars in a variety of ways: they conduct research and communicate its results, teach courses, and perform a wide variety of administrative tasks. These actions are common enough to academic scholars to constitute a set of practices that define the profession.[34]

In the humanities, as in other academic areas, there is the added complication that scholars both practice a profession and contribute to bodies of knowledge meant at some

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[34] There are, obviously, exceptions to this definition, such as academics who become administrators or academics without teaching duties.

level to be put into practice. The applicability or practicality of knowledge is frequently measured on a spectrum ranging from applied or practical research at one end of the spectrum to pure or theoretical research at the other. A substantial element of humanities practice, the building of knowledge and theory through research and publication, is normally positioned at the pure research end of the spectrum. Indeed, of the set of practices which characterize the professional humanities scholar, contributions to knowledge and theory carry the greatest weight in defining and distinguishing professionals in the field. The complication arises when we consider that the other practices defining the professional humanities scholar are far more practical in nature and substantial in measure. For many humanities scholars in North America, the eight-month period spanning September to April is spent teaching and performing myriad administrative duties, practices which take a symbolic backseat to the publication of research. In other words, theory and speculation carry greater symbolic value than does the practical application of knowledge and theory to utilitarian ends such as instruction and institutional management. The irony here is obvious: the practice that has the most effect upon an academic's professional status is the practice for which there is the least time.[35]

All ironies aside, further complication arises when humanities academics attempt to increase the value of the practical application of knowledge to the privileged levels of

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[35] In some ways, this arrangement of academic practice increases the value of publications by potentially decreasing the amount of research produced. That said, there is no shortage of scholarship being published.

pure research. Ignoring technology for the moment, we can find an example of this unbalanced emphasis on theory over practice in English departments, where there exists a symbolic divide between scholars of literature and critical theory and scholars of composition and rhetoric. Possessing low symbolic value, composition and rhetoric is tainted by the mechanics of technical training and by its relegation to a service for the university community.[36] But, like other areas of practice-based humanities research, there is a move afoot to bring composition and rhetoric into the space of pure research through the formation of professional societies and journals where canons of theoretical analysis are developed with the aim to establish the intellectual ground necessary for legitimization as pure, theoretically-based research. One representative example can be seen in the Alliance for Computers and Writing, a professional, non-profit organization whose mandate includes "supporting teachers at all levels of instruction in their intelligent, *theory-based* use of computers in writing instruction" (emphasis added).[37]

With the advent of computer-based technologies as viable modes of communication—the Internet being the most obvious example—new forms of scholarly production are developing, including hypertext essays, web sites featuring primary and secondary materials, electronic research tools and finding aids, digital anthologies that

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[36] For an historical analysis of the place of composition and rhetoric within English departments, see Watkins, Evan. *Work Time: English Departments and the Circulation of Cultural Value*. Stanford: Stanford UP, 1989.

[37] See http://english.ttu.edu/acw/action/help.asp?keyword=intro (accessed February 14, 2000).

combine text, image, animation, video, and sound, online learning tools, listservs, and online virtual spaces such as MUDs, MOOs, and GMUCs.[38] These practices range from the mere adaptation of print to digital publication to more innovative activities that represent a radical shift towards the practical application of computer technologies to research and instruction. Yet, even with the development of so many new forms of scholarly production—a sign of academic energy and vigor—the humanities has been slow to recognize these practices as legitimate or to invest them with symbolic value equivalent to traditional forms of academic production. For the most part, digital scholars in the humanities have been creating electronic tools and resources on their own time in the belief that their work is valuable to the community, if not to their administrations.

This work should be recognized more broadly than it is currently. Humanities technological practitioners across the board need to force the issue by raising questions about the legitimacy of their work, questions such as, what form of official recognition should be given by hiring, tenure, and promotion committees to academics who run scholarly discussion lists on the Internet, a practice that promotes, facilitates, and contributes to the development and circulation of research?[39] Is the development of a

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[38] These acronyms stand for Multi-User Dungeon or Domain (MUD), Multi-User Object Oriented (MOO), and Graphic Multi-User Conference (GMUC).

[39] The Modern Languages Association has drafted a set of guidelines for evaluating digital work called "Draft Guidelines for Evaluating Work with Digital Media in the

scholarly multimedia CD worth the same symbolic value as its printed counterpart? Or does its necessary reliance upon non-linguistic elements (visual interface, images, sound, animation, video) degrade it by introducing sensual pleasure where purely rational intellect, which typically excludes the non-linguistic, should reside supreme? Perhaps it should receive greater recognition if, in its design and development, it provides new and effective means for teaching or for conducting research? Should the innovative design and development of web-based instructional and research material also count as formally recognized and highly valued scholarly production? Or does the academic value of these practices only emerge from the conversion of the practice into textual theorization in the form of publications and conference presentations? Papers that theorize technological practice are necessary both practically and theoretically. But if we add the time, work, and capital of technological practice to that of generating print publication, then we risk dramatically increasing the ratio of practice to publication. In other words, we could potentially demand more scholarly work for equivalent recognition. In brief, technological practice impedes the accumulation of symbolic capital within the field of humanities production because, as a practical endeavour, it runs the risk of falling outside the privileged field of pure research.

We also need to consider the sorts of coursework we assign and accept from our students. If we want digital practice to be recognized more fully than it is, then we also need to encourage such practice in our students. This means developing criteria for

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Modern Languages." It is available online at

http://www.mla.org/reports/ccet/draft_ccet_guidelines.htm

evaluating digital documents. When we mark student essays, we normally require that students understand the mechanics of essay writing. A good student essay needs an introduction, a clearly articulated thesis statement, logically organized arguments, and a conclusion of some sort, all in clearly written prose. What is the criteria for a well-composed digital document? Are there rules for good media use? Are there genres of multimedia documents that each require their own set of rules?[40] If we begin to establish criteria in our teaching and grading practices, then we will be one step closer to arguing how our own digital productions should be evaluated by university administrations.

Methodology

Ironically, new humanities digital scholarly practices do not necessarily mean new methodological approaches to scholarship. Although humanities computing currently covers a wide spectrum of practices and theoretical frameworks, the area designated

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[40] Criteria for creating and evaluating multimedia documents are being developed. For instance, Jacob Nielsen offers a set of five criteria including easy to learn, easy to use, easy to remember, few errors, pleasant to use. See Nielsen, Jakob. *Multimedia and Hypertext: The Internet and Beyond*. Boston: AP Professional, 1995, pp. 279 - 307. Daniel Robbins has developed a triangular taxonomy for describing types of interactive digital works. See Spalter, Anne Morgan. *The Computer in the Visual Arts*. Don Mills, Ontario: Addison-Wesley Longman, 1999, pp. 395 - 399. George Landow provides a categorization of links in his influential study of hypertext, *Hypertext 2.0* (see especially pp. 11 - 20).

"humanities computing" generally refers to the specific practices of computer-based textual encoding and textual analysis in support of humanities research.[41] Common research projects in humanities computing include the digitization and tagging of primary printed texts,[42] the creation of tagged secondary material,[43] and statistical text analysis.[44] In recent years, other computing practices have been included under the humanities computing heading—hypertext,[45] multimedia,[46] and new media studies are the most

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[41] For a series of attempts to define humanities computing as a discipline, see work by Willard McCarty available at http://ilex.cc.kcl.ac.uk/wlm/ (accessed March 2000), especially "What is humanities computing? Towards a definition of the field" and "Humanities computing as interdiscipline."

[42] Some significant projects include the ARTFL project at the University of Chicago (http://humanities.uchicago.edu/ARTFL/ARTFL.html), the Brown Women's Writers Project at Brown University (http://www.wwp.brown.edu/wwp_home.html), the Victorian Women's Writers Project at the Indiana University (http://www.indiana.edu/~letrs/vwwp/), and The Internet Shakespeare Editions at the University of Victoria (http://web.uvic.ca/shakespeare/).

[43] The most noteworthy example of tagged secondary material is the Orlando Project at the University of Alberta (http://www.ualberta.ca/ORLANDO/).

[44] A popular use for statistical analysis has been authorship attribution studies by linguist scholars of ancient texts.

[45] George Landow has been at the forefront of hypertext research since his development of a pedagogical hypertext system at Brown University in the 1980s. See Landow,

significant—but it remains that the majority of work formally recognized by the Association of Computing in the Humanities (ACH) and Association for Literary and Linguistic Computing (ALLC) is based in textual encoding, computerized text analysis, and computational criticism.[47] At this moment in the history of the book, document

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George. *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*. Baltimore: Johns Hopkins UP, 1997.

[46] New programmes in multimedia are being offered in Canada at McMaster University, the University of Lethbridge, and the University of New Brunswick. Canada has yet to offer graduate degrees in multimedia *per se*, although some MFA programmes, including those at the University of Waterloo, the Nova Scotia College of Art and Design, Concordia University among others, support the use of new media. We can only assume that, as more undergraduate programmes in multimedia develop, graduate programmes in the area will increase. In addition to university programmes, there are new advances in online access to multimedia materials. Indeed, with the development of web-based multimedia technologies, libraries and museums have begun mounting large online image databases. The Art Museum Image Consortium (AMICO) was formed in 1997 to build a multimedia library of art images for educational purposes (http://www.amico.org/home.html). In addition, the Museum and the Online Archive of California (MOAC) is building a prototype virtual museum archive based upon standardized finding aids (http://www.bampfa.berkeley.edu/moac/).

[47] The ACH and ALLC are beginning to recognize more and more research on multimedia, as evidenced by a special panel debate entitled "Humanities Computing and

tagging schemes are vitally important to the future of our libraries and other research resources, so it makes sense that markup languages like SGML and XML, document type definitions, and document object models form a core of debate in humanities computing.

Since so much of the practical work of humanities computing involves finding and tagging document structure, there is a tendency in humanities computing to view documents for their internal structure rather than for their cultural context. This bias has not gone unnoticed by those in the community. In a panel debate at the 1999 ACH-ALLC conference, Allen Renear and Jerome McGann debated "What is a text? A debate on the philosophical and epistemological nature of text in the light of humanities computing research." It became apparent to this attendee that Renear and McGann were approaching the issue from two very different theoretical frameworks. Renear thought about text within a formalist framework, where a text is words and where words are letters and letters alone. McGann, on the other hand, argued that a text is much more than a collection of words; a text is its meaning or interpretation socially acquired over time. In addition to making his familiar argument about the social history of a text's reception, he also performed close readings of a small selection of poems to demonstrate the subjective and associative nature of reading. His point was simple: how can we tag

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the Rise of New Media Studies: Synergy or Disjunction?" at the 1999 ACH-ALLC International Humanities Computing Conference. It remains, however, that approximately two thirds of the papers and panels presented at the 1999 ACH-ALLC conference focused on issues of text markup and analysis.

the context of a text? If a text is more than the words on the page or screen, is it even taggable?

The very fact that this debate took place suggests that the bias toward a formalist approach to textual structure is being reconsidered. More recent approaches to studying text and culture are indeed being applied in the field. For instance, text markup for hypertextual linking raises many issues congruent with post-structuralist and postmodernist notions of reading.[48] But it remains that defining and marking document structure is a central concern for humanities computing scholars. As such, currently favoured methodologies for text analysis are often overlooked in favour of structuralist approaches or what William Winder calls "neo-structuralist" methods. In his analysis of structuralism's attempt to deal more effectively with context, Winder points out that, "Computational criticism shares with structuralism the founding principle of explicit, algorithmic interpretation."[49] Unfortunately, this form of structuralism does not carry the symbolic value it once did in the field of humanities production. Today, derivatives of post-structuralism, postmodernism, and theories of gender, sexuality, and ethnicity are the privileged approaches.

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[48] See Landow, George. *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*. Baltimore: Johns Hopkins UP, 1997.

[49] Winder, William. "French Neo-Structuralism and Computational Criticism." Conference paper presented at 1999 Congress of the Social Sciences and the Humanities, June 4, 1999. Abstract available at http://www.interchange.ubc.ca/winder/abs_1999.htm.

It remains, however, that a common approach to textual study in humanities computing is the scientifically precise analysis of linguistic structure and arrangement in literary texts. This quantitative approach relies upon the power of computers to count and compare words and their forms. But as Willie van Peer notes, "the very act of transforming a text's characteristics into numbers ... renders an essential layer of its information inaccessible to further analysis" (van Peer, 302). I agree with van Peer's criticism of computerized lexical analysis and McGann's criticism of tagging literary texts because they both point to the seeming impossibility for computers to quantify contextual meanings. I disagree, however, with van Peer's assessment that "no level of (mathematical) sophistication is able to overcome the problem that the processes of meaning constitution have been eliminated before the analysis is undertaken" (van Peer, 302). Rather than close off possibilities unknown, I would argue that humanities computing scholars reflect on van Peer's criticisms and seek new technologies that will keep contextual meaning open for computerized analysis.

One option may come from research in fuzzy logic and artificial intelligence, which may answer many problems with digital document preparation. For instance, tagging written documents for structure or for content is, at some level, an interpretation of the document. Obviously, tagging for content is an act of interpretation as the tagger decides what content is important enough to tag and how to tag it. While tagging for content may be useful for the theoretical concerns of its day, the longevity of the markup is limited by the development of new scholarly concerns and methodologies. Tagging structure is also interpretive, as it marks structure as an element important enough to be tagged. It also affects how the document is displayed on screen and may, as a result,

foreground certain parts of the text. One of the reasons for using markup languages like SGML and XML is that they stand the best chance of outlasting proprietary document formats like MS Word or Corel Word Perfect. But even if this is so, the markup itself, and the interpretive assumptions it carries, may not outlast the digital format. In other words, if a key concern around digitizing documents is their longevity, then we might rethink document tagging altogether.

I suggest that a better expenditure of time and money involves developing complex search tools, perhaps based upon fuzzy logic and artificial intelligence. We could keep texts in a basic ASCII format with minimal meta data tagging to state where, when, and by whom the document was prepared. An AI-based search engine could then use the ASCII text as a basis upon which to build individualized documents that arrange and highlight material according to a scholar's search criteria. The issues of contextual meaning and longevity would then switch to the search tools as we could not avoid certain methodological and topical biases from being built into them. But, if the search tools were built within a open environment able to handle new search modules designed by anyone with the skill and desire, then we would stand a better chance of supporting the development of new scholarly interests over time. Even though painting all humanities computing scholarship with the brush of structuralism and quantitative analysis would demonstrate a severe blindness to the field, structuralist and quantitative hues do colour assumptions about the nature of technology-based humanities research. Tell a non-computing humanities scholar that your research is computer-based, and you might be understood to mean that you markup structure, count words, compile statistics, and do other computational, empirical studies of literature. Even though studies in fuzzy

logic and artificial intelligence argue that computers could be given greater intelligence, even possibly made to think, responses to computational criticism normally include comments like "computers don't think or read like humans do. They merely compute." According to competing views of the proper aim of literary criticism, literature should not be interpreted through the lens of reductive empirical analysis, but it should be looked at for its ambiguities, inconsistencies, and uncertainties, which are only available to the associative nature of the human mind.

Within the field of humanities production, then, humanities computing faces the difficult task of demonstrating to peers and humanities grant reviewers that empirical, structuralist criticism is a legitimate methodology within humanities research.[50] And humanities computing scholars who adhere to more privileged methodologies must defend themselves against misinformed assumptions that their inclusion of computing within a research agenda devalues their scholarship by its mere association with the empiricism of the computational. In other words, humanities computing is doubly sidelined in the humanities because it depends heavily upon practice when theory is the privileged approach to knowledge, and, for many, it implies an empirical, algorithmic,

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[50] Not all granting agencies are unsympathetic to projects in humanities computing. *The Orlando Project* at the University of Alberta and Guelph University is one obvious example of SSHRCC, Canada's federal humanities funding agency, supporting humanities computing. But the empirical approach common in humanities computing projects opens up the doors to funding agencies normally associated with science and industry, such as CFI (Canada Foundation for Innovation).

and hence marginalized study of cultural production rather than a more privileged speculative approach.

Industry and the Practical Application of Knowledge

Humanities computing's double focus on the practical, whether justified or not, connects it implicitly and explicitly to the new market-oriented economic direction in university management, which encourages a model of research that prioritizes applied knowledge and its economic value realized through technology transfer. Recently, the idea of the practical application of knowledge, especially within the technology and technoscience sectors, has come to imply connections with industry that threaten to commoditize knowledge, distort the social function of the university to improve life through the free distribution of knowledge, place curriculum in the hands of the for-profit community, and make publicly-funded universities into the research labs for private industry. As Sheila Slaughter and Larry L. Leslie put it, we have entered an period of "academic capitalism":

> Universities are the repositories of much of the most scarce and valuable human capital that nations possess, capital that is valuable because it is essential to the development of the high technology and technoscience necessary for competing successfully in the global economy. The human capital possessed by universities, of course, is vested in their academic staffs. Thus the specific commodity is *academic* capital, which is no more than the particular human capital possessed by academics. The final step in the logic is to say that when faculty implement their academic capital through engagement in production, they are engaging in *academic capitalism*. Their scarce and specialized knowledge and skills are being

> applied to productive work that yields a benefit to the individual academic, to the public university they serve, to the corporations with which they work, and to the larger society. (Slaughter and Leslie, 10 - 11)

The trend towards academic capitalism, which implies direct connections between the university and private industry, has been reshaping research in the applied sciences for years and is now beginning to appear within the humanities. Although the system for delivering technological advancements to industry, best illustrated by the increasing number of university offices of technology transfer, may not be appropriate for building and sustaining humanities-industry relations, there are other signs of the increasing pressure on humanities scholars to make their research more practically applicable.

Nowhere is this more obvious than in government-sponsored research and infrastructure funding programmes where humanities applicants are increasingly required to procure private industry investment, to ensure that their research is practically applicable, and/or to contribute to the training of graduate students in relevant and marketable skills. New initiatives from the central humanities funding agency in Canada, the Social Sciences and Humanities Research Council (SSHRC), have begun moving in this direction. For instance, SSHRC's "Society, Culture and the Health of Canadians II" has the following five prioritized objectives:

- expand the base of applied interdisciplinary knowledge to assist those who can use and benefit from the research to identify and understand the relationships between society, culture and the health of Canadians;
- create more training opportunities in applied interdisciplinary health research for young researchers and students;

- ensure the transfer of this knowledge to those who can use it to improve the health of Canadians, including research on how transfer and up-take occurs;
- contribute to the development of policy of interest to the Government of Canada;
- involve end-users of research results both as team members and as partners.[51]

The first three objectives (the development of applied knowledge, the training of new researchers in applied knowledge, and the transfer of knowledge from the university to industry) all signal a shift away from funding for purely curiosity-based research toward applied research with the potential for knowledge transfer to industry. Although currently only a small number of SSRHC programmes have requirements that could be thought to promote academic capitalism, the trend has begun and, in the face of increased pressure from federal and provincial governments, the signs are that this trend will continue.

Humanities computing scholars are in a curious position if they want their research funded. On the one hand, they face their peers' bias against practical, technological research, and so may face negative bias from humanities funding committees, but on the other hand, if they apply for funding from science-oriented agencies, which tend to force close industry relations and technology transfer, they risk adopting models of research that contradict the values of a liberal arts education. Indeed,

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[51] For a complete description of the programme, see http://www.sshrc.ca/english/programinfo/grantsguide/nhrdp.html (accessed January 2000).

humanities computing scholars now find that they are eligible for new sources of funding normally aimed at science and technology research. The most significant programme currently running in Canada is the Canadian Foundation for Innovation (CFI), set up in 1997 "to increase the capability of Canadian universities, colleges, hospitals, and other not-for-profit institutions to carry out important world-class scientific research and technology development."[52] As such, CFI's number one goal is to "support economic growth and job creation," in four target areas: health, environment, science, and engineering. According to its funding formula, CFI will support 40% of a project and expect the remaining 60% to come from institutional and industry partnerships. And so, living the cliché "damned if you do, damned if you don't," humanities computing scholars face alienation from the field of humanities production by the nature of their qualification for funding.

Making matters worse still, just as an anti-technology bias in the humanities may work against funding for humanities computing research, so may an anti-humanities bias in the sciences work against the same scholarship, even if the research promises technological innovation. As I argued in an earlier chapter, the divide between the humanities and the sciences, which has a long-standing tradition, is still envisioned according to C.P. Snow's split between two cultures.[53] "Stuck between a rock and a hard

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[52] See http://www.innovation.ca/english/about/index.html (accessed January 2000).

[53] Michael Dertouzos, who has increased the number of cultures to three, recently asked that we "heal the division of humanity into "techies," "hummies" and religious believers."

place," perhaps the only comfort for those whose research spans the divide is that they prove another cliché true.

One might see the growing connections between industry and the humanities as a sign of the diminishing autonomy of the field of humanities production, which, in Bourdieu's eyes, paints a poor picture for the future of artists and intellectuals. For Bourdieu, the autonomy of the intellectual and artistic fields from the market is necessary to support the production of the best artistic and intellectual work. Yet, as Bourdieu and others note, this autonomy is threatened by "new forms of scholarship, ... new alliances being established between certain economic enterprises ... and cultural producers; ... [and] of the creation of educational institutions directly subordinated to business" (Bourdieu, *RA*, 344). Fearing the effects of lost autonomy, he calls for "intellectuals to mobilize and create a veritable *Internationale of intellectuals* committed to defending the autonomy of the universes of cultural production" (Bourdieu, *RA*, 344). What we find in Bourdieu's call to collectivity is a belief, shared by many humanities scholars, in keeping the fields of cultural production separate from the necessarily negative influence of the market.

One need only look to the Canadian press to find examples of humanities scholars trying to stimulate academic collectivity through editorial warnings to the government and the public of the impending disaster that looms over post-secondary education. For example, recent outcries against the provincial governments in Ontario and Alberta for

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See Dertouszos, Michael. "The Enlightenment Bug." *Technology Review*. January-February 2000 (Vol. 103, No 1), Boston: MIT, 28.

their anti-humanities sentiments, expressed verbally and financially, exemplify reaction against the privileging of practical, technological knowledge by government initiatives to stimulate science and technology at the expense of the humanities. The largest such outcry is in response to the Ontario provincial government's Superbuild programme, which granted financial awards for building infrastructure to handle increasing student enrolment. Of the $760 million in awards announced, almost half went to colleges alone or joints projects between colleges and universities. Most of the awards will fund new classrooms for science and engineering, with very little being applied to the humanities. Indeed, at least five liberal arts universities and several liberal arts colleges received no funding at all. For many in the humanities, the Ontario government has made a clear statement about how it plans to manage post-secondary education: throw lifelines to the science and technology programmes and let the liberal arts suffocate.

The rhetoric from these responses to government action is strong, and the arguments are familiar and meaningful to anyone who works in the humanities. But as self-evident as the arguments may appear, perhaps we need to inquire more closely into the assumed threats faced by the humanities so that the arguments we use do not sound stale to hostile ears. For instance, does a movement in the humanities towards a more practical application of knowledge through stronger industry relations *necessarily* dilute value in the field of humanities production? Is intellectual work and the transmission of it through liberal arts programmes compromised when post-secondary institutions get too cozy with industry? Indeed, does such a relationship threaten the very idea of a liberal arts education? Or have such practical relationships always existed to some extent and thereby always been part of the definition of a liberal education? If so, does strong

reaction against practical programmes and industry relations signify a defense of the field's current autonomy or a movement towards greater autonomy? More significantly, does decreased autonomy necessarily mean a one-way flow of compromise from the market, or could it also mean a bi-directional flow of influence? In other words, could closer relationships between the humanities and the market benefit society?

Paul Axelrod takes up some of these questions in his short but pertinent commentary "The Precarious Place of Liberal Education in the New Millennium."[54] He illustrates succinctly that the traditions which inform today's notion of a liberal education have historically involved close relationships with industry. For instance, "universities of the middle ages not only trained ministers, but also lawyers, judges, accountants, administrators, and doctors who used the liberal education subjects of logic and oratory to conduct the business of the churches, the diplomatic service, and the civil state" (Axelrod 18). In more recent times, and especially during the 1960s and 1970s period of massive university expansion in Canada, our society fostered the notion that a liberal arts education was economically valuable because it signaled a generalized set of useful and marketable skills, especially in the areas of critical thinking and communications. So, the link between the liberal arts and industry has always existed in some manner and it makes sense that this link continues, for surely a significant element of the university's role in society is the promotion of responsible citizens who contribute to society through the direct and practical application of knowledge gained at university.

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[54] Axelrod, Paul. "The Precarious Place of Liberal Education in the New Millenium," *OCUFA Forum*. Fall 1999.

But as economic markets free themselves from government regulation and as multinational corporations increasingly gain global political power, the question of the degree of the relationship between the liberal arts and the market becomes rather thorny. Whereas the bulk of funding for the humanities, whether for individual research grants or for general operating budgets, once came almost exclusively from government, it now comes increasingly from a mixture of public and private sources.[55] So, while relations with industry are, on the one hand, part of the definition of the humanities, shifts in this relationship threaten to redefine or at least disturb it. Or, expressed using Bourdieu's vocabulary, we may be witnessing a shift in the field of restricted production towards a field of large-scale production where the agents consecrating the cultural goods are not necessarily also producers of the same type of cultural goods.

The anecdote of McMaster University's BA in Multimedia that opened this chapter works well as an example of the changing relationships between industry and the humanities curriculum. The major funding for the degree programme came from the Ontario provincial government's Access to Opportunities Program (ATOP), a grant divided into two financial pots. The first came in the form of a continuing operating budget based upon the number of in-programme students. The second pot of funding was a one-time grant based upon a simple formula: the provincial Ministry of Training, Colleges, and Universities (even the name betrays itself) would match any contribution

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[55] In Canada, the recent flurry of university capital campaigns is a good illustration of how universities are attempting to draw from industry to make up for lost and inadequate government funding.

from private industry up to a ceiling calculated on projected programme enrolments. This one-time funding was intended to provide recipient institutions with the capital necessary for programme infrastructure, such as computers, software, labs, and lab furniture. But the unspoken intentions do not stop there. This funding also had the intention, or at least the effect, of including industry in the proposed academic programme, whether to guarantee that the programme design had practical industry relevance, or, more radically, to include industry in curriculum development. In other words, the Ontario government tried to ensure that those institutions satisfying industry the most would, in turn, receive the most.

In the case of McMaster's Multimedia programme, we were strongly opposed to giving industry any amount of control over our curriculum. As such, we focused our efforts on industry donors who stood to gain visibility either through a naming opportunity, such as for scholarships, or by placing their products in the hands of our students, such as computer software and hardware used to support the programme. Obviously, our choices over which software packages and hardware systems to use partially shapes what tools we teach, and therefore has some direct influence over curriculum. That said, we were able to maintain autonomy by negotiating agreements without compromising principles, for these agreements do not prevent us from using or exposing students to other competing products. It is important to recognize that industry donations do not necessarily mean industry control.

In a more subtle way, however, the very fact that the programme received funding from ATOP illustrates how the humanities curriculum has been shaped by the wishes of government and industry to build stronger relationships between the university and the

market. Indeed, the very stimulus for the programme came from the Ontario government's belief that, currently, the greatest industry demand for graduates comes from knowledge and information technology industries. According to the ATOP "Backgrounder,"

- Across North America, companies are scrambling to find qualified professionals in the high-growth sector of engineering and computer science. In Ontario the demand for graduates of high-tech computer science and engineering programs far exceeds the supply.
- Over the past decade, high-technology and knowledge-intensive industries have led job creation in Ontario. Two-thirds of net job creation have been in these sectors, even though they account for only 39 per cent of employment.
- During the past 10 years, two of every three new jobs in Ontario were created in knowledge and technology-based industries.[56]

Clearly, the Ontario government—not unique in its perspective—sees that one of the primary roles of post-secondary education in society is to fulfill the changing requirements of industry, which currently includes highly trained employees in the technology sectors. In an effort to prove its point to universities, the ATOP programme required applicants to include letters from industry supporting the programme for its anticipated contribution of employable graduates to the information technology industry.

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[56] See http://www.edu.gov.on.ca/eng/general/postsec/atop/atop4.html (accessed July 1999).

In other words, government funding is explicitly connected to industry's need for technological expertise.

Yet, with this model of funding comes obvious concern from those areas of university instruction which seemingly do not contribute to industry's need for technological expertise. One might wonder where Greek and Latin or Philosophy and History fit in funding formulas that prioritize technology.[57] In its defence of the social sciences and humanities against government's overly narrow focus on technologically trained graduates, SSRHC commissioned *Education and Technological Revolutions: The Role of the Social Sciences and the Humanities in the Knowledge Based Economy*, a report by Robert C. Allen of the University of British Columbia. Allen claims that his statistical "evidence says techism isn't enough to guarantee our future in the 21st century."[58] And as the report's "Backgrounder" states, "University graduates in the social sciences and humanities are a better investment and better placed to succeed in the

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[57] Such concern arises frequently in response to politician's public statements. For instance, Premiere Mike Harris of Ontario recently complained to an audience of high-tech workers that "we seem to be graduating more people who are great thinkers, but they know nothing about math or science or engineering or the skill sets that are needed" (Blackwell, Tom. "Harris hits back at his critics in academia Greek v. High-tech." *National Post*. February 11, 2000, http://www.nationalpost.com/ access February 2000).

[58] See Social Sciences and Humanities Research Council press release of December 6, 1999, available at http://www.sshrc.ca/english/resnews/pressreleases/allen99.html (accessed January 2000).

emerging global economy than many of their 'high-tech' and technically-trained counterparts."[59] This is good news for the social sciences and humanities. Interestingly, though, Allen is not concerned about whether universities should or should not be aiming their programmes at industry need. Allen is more concerned with finding what industry really wants.

Allen's conclusions correspond in part to our own experiences with ATOP at McMaster University, where supporting letters from industry stressed the connection of technological skill with the traditions of criticism, communication and creativity that form the focus of a humanities education. Nortel notes "the substantial value to the larger IT community, and potentially to Nortel in particular, of a greater availability of graduates in the IT sector, especially if they have a broad training that includes more diverse skills." According to Apple Canada, "Your proposed curriculum would allow students to enter the work force in this high growth sector with not only provide the critical skills they require, but also the practical applications needed. ... Your programme will make a valuable contribution to an industry sector that is in dire need of more technically educated graduates." And from Softarc, makers of FirstClass communications software, "We are particularly pleased to see the combination of computing skills with the creative and communicative skills. ... your programme will be well placed to meet the need for the growing content development field." Admittedly,

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[59] See "Canadian prosperity in the 21st century: More than "techism" can deliver," http://www.sshrc.ca/english/resnews/pressreleases/allen99back.html (accessed January 12, 2000).

these letters were written with the understanding that they would be applied towards our application to ATOP, and so they may illustrate a contextual bias. That said, they still reflect Allen's general point that the government's focus on technological skill alone is overly narrow and potentially misguided.

When it comes to government funding programmes that promote university-industry relations, research grants may seem a more direct enactment of academic capitalism than do grants that support building new or expanding existing academic programmes. After all, as their name implies, research grants have a more immediate impact on research. But we need to note that funding, like that from ATOP and Superbuild, for academic programmes and their infrastructure allows for the cultivation of greater numbers of researchers and the development of new areas of research, all in part funded by the rewards of academic capitalism and, as examples of success, all promoting academic capitalism as a potentially valuable practice. Consequently, we might begin to see any perceived differences in symbolic value between government and private funding lessen as humanities-industry relations increase. In other words, the diminishment of autonomy represented by university-industry relations may not necessarily result in any less symbolic capital within the field. Indeed, the more that successful university-industry relations are seen by scholarly peers as signs of academic success, the greater the symbolic value of the economic gains. In the applied sciences, successful academic capitalism can easily translate into symbolic capital, whether amongst peers within the discipline (very high symbolic value) or via media outlets (compensatory symbolic value). For instance, large pharmaceutical research grants from

private companies are a sign of success in health sciences and thereby translate into symbolic capital. In their study, Slaughter and Leslie claim that

> faculty are willing to invest a great deal of professional energy in winning financial awards so long as the resources secured allow them to maintain or even enhance their place in the status and prestige system and permit some degree of discretionary spending. Faculty are quite willing to compete for commercial moneys if these resources do not conflict directly with traditional status and prestige hierarchies and compensate with symbolic rewards such as media association of science and technology with national economic competitiveness. … If resources do not undermine faculty status and prestige systems, a relatively small amount of money at the margins can alter faculty activity substantially. (Slaughter & Leslie, 18)

Academic capitalism, which is based upon the transfer of practical research to industry in exchange for economic capital, is translated into symbolic capital when it contributes to an academic's status and prestige.

Currently, in the humanities government research grants carry a higher symbolic value than private grants from industry, not only because industry grants are uncommon and therefore immediately suspect, but also because they imply research that is sponsored by private interest (funding in exchange for research results) and driven by practical application rather than by pure curiosity. In some respects, it is the practicality of the research that devalues it. In the field of humanities production, then, economic capital translates most easily into symbolic capital when the money comes from public funds for curiosity-based research and less easily when private funds appear to sponsor applied

research transferable to industry. In these cases, the source of the funds and its potential sponsorship of practical research degrades the object of production on the scale of academic value.

But with university-industry relations increasingly being woven into government funding criteria for the humanities, it seems as though we are set to see changes in the field, whether in the composition of cross-disciplinary collaborative research groups or in the sponsorship of curriculum. If any areas of humanities research and instruction will introduce a diminishment of autonomy in the field, it will be in those areas where technology and practice are central. In other words, as humanities computing and multimedia grow as subjects of humanities inquiry—associated as they are with the burgeoning communications technology industry and with the practical application of knowledge—we are likely to see these areas take a lead role in establishing industry relationships.

But the question arises again: Does the connection of technology and the practical application of knowledge necessarily mean the dissolution of autonomy of the field of restricted production? Some organizations would like to make this the case. At the 1998 World Conference on Higher Education held at UNESCO headquarters in Paris, the World Bank promoted its "reform agenda" based upon the neo-liberal economic principles of privatization, deregulation, and market orientation (CAUT, Nov. 1998). Essentially, the World Bank wants control of post-secondary education to be in the hands of market-driven business. More locally, the Canadian federal government's Expert Panel on the Commercialization of University Research (EPCUR) published its final report "Public Investments in University Research: Reaping the Benefits" in May 1999,

in which it recommends that "Universities (and their affiliated organizations) must recognize the importance of research-based innovation as a mainstream activity by identifying 'innovation' as their fourth mission, in addition to teaching, research, and community service" (Gov. Canada, 4). On the surface, this seems harmless enough, and perhaps slightly redundant, as it is conceivably covered by "research.". But, EPCUR defines innovation as "the process of bringing new goods and services to market, or the result of that process" (Gov. Canada, 1). In other words, EPCUR would like research for the economic benefit of industry to become the fourth defining practice of academics. The autonomy of academic production, therefore, is under siege by economic interests.

Yet, not all university-industry relations spell the end of autonomy. It is conceivable that, as I have already suggested, even if the autonomy of the field is diminished, we may not witness a corresponding dilution of the academic's power to consecrate work through investments of symbolic capital. Scholars may end up producing for an audience larger than their peers, perhaps including a set of industry evaluators who use means other than reading research to evaluate its success, but this does not necessarily preclude the maintenance of a system of peer evaluation and consecration. It depends upon the evaluative structures that are put in place for engaging with industry.

We also need to wonder if the division between these fields necessarily promotes the best scholarly production? As Nicholas Brown and Imre Szeman report, "Bourdieu assumes that the greatest works of art and culture are produced at the furthest distance from the market, where they can be created purely under the influence of the imperatives generated within the particular field itself" (Brown & Szeman, 8). But since the practical

application of knowledge has always been, in some part, a defining feature of the humanities, then we need to wonder why, at this moment in history, when practice rears it head in the guise of computer technologies, there are anxieties about connections between the humanities and industry. Economic globalization is leading to weaker governments and stronger multinational corporations, so there is a general fear that power over academic consumption is shifting from the hands of researchers to the cash registers of multinationals. This does not mean, however, that connections between the humanities and industry must inevitably lead to a loss of autonomy, or even that complete autonomy is the best solution. Indeed, we might consider how industry relations can satisfy both the pressure to partner with industry and the desire maintain autonomy. Better yet, we might imagine ways in which diluting the humanities' autonomy might in fact lead to social improvements in the face of globalization's threat to social equalities. Would it be so bad if the humanities addressed social ills more directly by participating in relationships with industry? Indeed, might not such a dilution of autonomy increase the humanities' power to affect change? The argument that the field of cultural production is stronger in relation to its distance from the market assumes that the direction of influence between the poles is unidirectional, with the market affecting the field of cultural production, but the field of cultural production powerless to affect the market.

Epilogue

McMaster University's programme in Multimedia is an institutionally based and very powerful attempt to legitimate multimedia as an area of academic inquiry in the humanities. Such a move is fraught with contention as it implies technological practice,

relationships with the market, the commoditization of knowledge, empirical approaches to knowledge, and the practical application of knowledge. Indeed, we need to be concerned about how these relationships and new dimensions of the humanities are set up and managed. But to think that the influence between the market and the humanities is only one way is to surrender before the battle begins. A more proactive position would be to assume that the humanities can positively affect the field of large-scale production through direct thought carefully considered participation.

Chapter 3

Hype-or-Text?
The Promise of Hypertext

One of the most influential and successful attempts to bring technological practice to the humanities has come in response to the development of hypertext technologies and in the form of hypertext theory. Even before the popularization of the world wide web as an accessible hypertext environment, individuals like Doug Engelbart—developer of Augment and its hypertext document system NLS (1962-1976)—Theodor Nelson, whose Xanadu still remains vapourware[60]—a great idea, but there is still no finished product beyond a beta version—and institutions like Brown University, whose Intermedia (1985) is well documented by George Landow,[61] were developing hypertext systems mainly within an academic setting for academic purposes. Along with this development has come a canon of critical works that attempt to theorize hypertext. The success of hypertext within the humanities, both as a practice and a theory, makes it an important

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[60] The developers of Xanadu, now known as Udanax, have released beta versions of the hypertext system and its browser as open source under the X11 open source agreement. As such, there may be hope to mix with the hype. See http://www.udanax.com/ (accessed September 2000).

[61] See Landow 1992 and 1997.

example of how new computing technologies are being introduced into the humanities in recent years. As such, I want to narrow my focus from a broad, systemic analysis of the humanities and technology to a consideration of hypertext theory within the general context of technology in the humanities, but with the specific task of demonstrating how its legitimization within the humanities has, to this point, depended upon a set of assumptions that ironically have helped maintain the split between technology and the humanities that I have been describing. I will follow up this critique of hypertext theory with a consideration of its failings within the context of multimedia, or digital works whose primary media type is not the word, but non-linguistic media like images, video, animation, and audio.

It's as Easy as Point and Click

"It's as easy as point and click!"
- Television Advertisement for America Online

"It's as easy as point and click." The very banality of the phrase "point and click" indicates the extent to which the explosive growth of information technologies, especially those connected to the Internet, is helping hypertext become a part of everyday experience.[62] Even if most web-surfers would not refer to interactive web pages as hypertext, it remains that the Internet is connected by millions of links created almost exclusively with the Hypertext Markup Language (HTML). Hypertext is appears to be

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[62] On 9 September 2000, the Google search engine at http://www.google .com listed approximately 318,000 web sites with the phrase "point and click.".

one of the hottest, most promising technologies on the block. If there is anything distinctively new about hypertext, it is the link, the highlighted selections of text, buttons, and image maps that promises expansion, enrichment, even fulfillment at the click of a mouse. No more hassles getting the information we need, just click an icon and a world of information opens before our eyes. Microsoft thinks as much, and has invested heavily in the promise of the mouse click. Indeed, its aggressive promotion of the Internet Explorer web browser and the subsequent anti-trust case brought against Microsoft by the Department of Justice in the US illustrates the importance of hypertext technologies to Microsoft's business strategy. It even acquired a trademark for the phrase, "information at your fingertips." And if the promise of information were not enough, Microsoft's mouse click promised access to the universe in its television advertising campaign for the release of Windows95 in which the question "Where do you want to go today?" was answered by a mouse click on the Windows95 start button. The universe in a click.

A similar enthusiasm about the promise of hypertext[63] preoccupies the minds and publications of many academics in the humanities who prophecy a literary reformation

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[63] In this chapter, I use the term "hypertext" to mean any electronically mediated form of textual *or visual* communication which uses hyperlinks of any sort (textual hotspots, image hotspots, buttons, etc.) to connect to other documents, whether those documents are hypertextual or not. It is the link that is one of the most important defining features of hypertext, not the text. In this way, then, my use of hypertext also covers hypermedia and/or multimedia, terms which usually denote more graphical, less strictly textual

unlike any we have witnessed before since the print revolution inspired by Gutenberg's press. Hypertext will radically alter literacy and reading, so the argument goes, bringing a convergence of technology with postmodernist theories of textuality, narrative, authority, the subject, etc., conceptions that evidently are not as apparent within the regime of print technology. As George Landow puts it, "hypertext promises to embody and thereby test aspects of theory, particularly those concerning textuality, narrative, and the roles or functions of reader and writer" (Landow, 1997, 2). Goodbye linearity, authority, and western canon; hello non-linearity, decentralization, and educational democracy!

At least, this is what the enthusiasts have argued, and they may be right. However, like the players in the computer industry, hypertext enthusiasts rely upon certain illusions to promote hypertext's promise. Whereas Microsoft creates the illusion of access to a universe of information via the mouse click, hypertext enthusiasts create the illusion of a decentralized, more truly democratic that would implement Theodor Nelson's "docuverse," an electronic network of documents navigated by mouse clicks. To be fair, hypertext enthusiasts don't promise the universe in a single mouse click, and

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environments. In the following chapter, I challenge the use of the term "hypertext" to cover digital works of interactivity based upon non-verbal text (images, animation, video, and sound). The problems with hypertext theory that I point to in this chapter and the next result in large part from a verbal text-centric bias that needs to be challenged before we can understand the social, cultural, and politic issues that arise from interactive digital media.

they develop far more intellectual arguments than the fifteen-second assaults we get from the likes of Microsoft and America Online. All the same, like the computer industry, they argue that hypertext promises something new—a radically new literacy—even if it is more than one mouse click away. Although it is not my intention in this essay to analyze Microsoft's Internet marketing efforts, I have begun by comparing them with recent hypertext theorizations to point out a general fascination with the promise of hypertext and the extent to which this promise, whether realized or not, is being wired into homes and offices, and disseminated into living rooms and classrooms.[64] These hypertext enthusiasts are investing enormous financial and intellectual capital in hypertext, forecasting a future when hypertext is a central cultural and aesthetic technology. As close as this future may seem to us now in the year 2000, hypertext is still very much a future technology. It's a technology with promise, and as such, has been the focus of considerable futurological analysis. In the early years of the 1990s, three key texts predicting a rosy future for hypertext appeared on the scene: Jay David Bolter's *Writing Space: The Computer, Hypertext, and the History of Writing* (1991), George P. Landow's *Hypertext: The Convergence of Contemporary Critical Thought and Technology* (1992), since republished as *Hypertext 2.0* (1997), and Richard Lanham's *The Electronic Word: Democracy, Technology and the Arts* (1993).[65] Less than a decade later, it is time to

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[64] While hypertext as a subject may not be the disciplinary focus of many academic class lectures, the use of the Internet as a research tool is certainly being promoted.

[65] This essay also deals extensively with J. Hillis Miller's 1995 essay, "The Ethics of Hypertext."

reconsider and reevaluate the speculations in these texts, speculations that continue to dominate discourse on hypertext.

Before I go any further in my discussion of hypertext theory, I should say that I am, in fact, a hypertext enthusiast. I originally composed this document as a hypertext, I have written other hypertext documents, and I look forward to writing more. I am excited by the technology and its potential applications, but I do not share the common opinion that hypertext will revolutionize the humanities and usher in a new era of democratic literacy that should be greeted with either celebration or lamentation. I am unable to say much about the future of hypertext other than this: if the arts and humanities hope to benefit from hypertext, then we need to participate actively in shaping the technology for our purposes. I believe with Christina Haas and Christine M. Neuwirth that technologies "are not static but shaped subtly and constantly by the uses to which they are put and by the discourse that accompanies those uses" (Haas and Neuwirth, "Writing Technology," 325).

To ensure our participation in the development of technologies of the word, I urge a significant adjustment in the currently popular understanding of hypertext as an agent of democratic change. Hypertext does not have agency. As Richard Grusin has argued, as a medium, it does not change anything, nor does it do anything.[66] It might seem a simplistic statement, but *people* make and use hypertext. Hypertext is a cultural practice. Consequently, while hypertext is not in itself revolutionary, it is entirely possible, although not necessarily so, that our *uses* of it could be. I am not saying that technology

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[66] See Grusin, 1994.

does not help to shape our cultural assumptions, but I am urging a more complex, multidirectional understanding of causality that considers how technology and culture, producers and consumers are involved in a tangled web of influence. The shift in perspective that I propose—it is neither new nor unique but needs further exploration in regards to hypertext—means looking at hypertext as something that is produced and consumed within culture rather than as something that comes into existence outside of culture and inherently "embodies poststructuralist conceptions of the open text" (Landow, 1997, 2). To argue that hypertext embodies cultural productions *essentially* is to argue for a certain technological determinism that invests technology with agency, precludes our own agency to determine its shape, and ignores the place of social structures of power within its production and consumption. Ironically, although hypertext enthusiasts like Landow and hypertext antagonists like Sven Birkerts regard hypertext very differently, they both rely upon the belief that technologies are developed outside of culture, that the properties and effects of technology are somehow inherent in technology rather than in its application. As I argued in chapter 1, Birkerts sees hypertext technology as defined by a set of inherent qualities that make it anti-humanistic. Many hypertext theorists also argue for inherent qualities in hypertext technology, but rather than seeing them as anti-humanistic, they see them as the opposite. In other words, the argument between Birkerts and many hypertext theorists is based upon a shared technological determinism. The danger of viewing hypertext through the lens of technological determinism is our distortion of or blindness to the material conditions and politics of its production and consumption. The common conception of hypertext is that it is essentially destabilizing, and as such, promises greater democracy by breaking down power structures inherent in

print culture. Since this view of hypertext focuses so heavily upon the liberation of once restricted agents (authors, readers, texts, students, etc.), I will follow Paul Duguid's lead and call this understanding of hypertext the liberationist view.[67] The liberationist view conceives a dematerialized, idealized model of hypertext that relies upon the apparent instability of electronic documents. From this ethereal foundation it claims that hypertext is essentially democratizing and poststructuralist in form and function.[68] I will argue that this position cannot logically hold once hypertext is understood in terms of the material conditions of its production, distribution, and consumption. Hypertext depends upon costly hardware and software; it depends upon a user's free time to learn and use; it depends upon agencies like the World Wide Web Consortium (W3C) and commercial interests like Microsoft, Netscape, and Eastgate Systems (makers of the Storyspace hypertext environment) to develop standards and tools; and, in the case of large academic

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[67] See Duguid, Paul, (1996).

[68] While this understanding has been developed mainly in the groundbreaking work on hypertext by Bolter, Landow, and Lanham, who in general claim that hypertext is the convergence of postmodernist critical theory and technology, it is also the prevailing understanding shared by most significant reactions against hypertext. In particular, Sven Birkerts and Alvin Kernan, in their denunciations of the electronic age, *The Gutenberg Elegies* and *The Death of Literature* respectively, share the view that electronic technologies of the text have agency and that they are essentially nonlinear, decentralizing, and anti-authorial. Although at odds with the celebrants of hypertext, they are really just the opposing side of the same coin.

hypertexts, it depends upon government grants and industry investment. Hypertext is, at is basis, a material thing.

The liberationists' utopian hypertext system—a highly interactive and open environment that Landow labels a "full hypertext system"—dismisses hypertext environments that are more closed or less full, such as the current state of the world wide web where the user's ability to add links within web documents is severely limited. Such a dismissal of non-ideal hypertext necessarily prevents an accurate account of hypertext as cultural practice. In addition, it leads to a distorted vision of democracy, which tends to support the status quo by privileging those already possessing social power and marginalizing those already marginalized. The liberationist view, I will show, fails to theorize the materiality of hypertext adequately and, therefore, similarly fails to theorize hypertext adequately.

The dematerialization of hypertext can also be understood as part of a strategy to legitimize hypertext as an area of study within the humanities. Ignoring the materiality of hypertext in favour of its supposed convergence with post-structuralist theory, liberationist hypertext theorists avoid alarming colleagues with the mechanical specter of technology and technological practice. Instead, they raise the prospect of pre-legitimized post-structuralist theory. That said, their promotion of hypertext is troubling for some traditional humanist scholars like Birkerts whose notion of the book as a stable, fixed, and linear artefact seems threatened by liberationist claims for hypertext's instability. But even if hypertext does destabilize the fixity of the book and thereby challenge our notions of reading—an argument I dispute in this chapter—the traditional divisions defining the humanities as separate from science, technology, and technological practice seemingly

remain stable. In other words, the liberationist theory of hypertext misidentifies the possibility of destabilization, claiming that whatever destabilization hypertext may bring is founded in post-structuralism, something the humanities has already accepted. If there is anything potentially destabilizing about hypertext, it is the possibility that its use highlights technology and technological practice, areas that the humanities defines itself against, as I have shown. Obviously, hypertext theorists know that technological skill is essential to hypertext practice, but for them it is not practice that they are trying to legitimize. It is theory.

I will now turn to a discussion of the liberationist view of hypertext, looking first at its claim that hypertext destabilizes the hierarchical structures of print culture. I will examine the two main elements of instability considered by the liberationist view: the evanescence of electronic documents and the hyperlink itself. According to the liberationist argument, the text's evanescence and the hyperlink's interconnectivity threaten the once stabilized fixity of print and embody poststructuralist theories of textuality by breaking the multiple boundaries that define the relations between authors, texts, and readers. After disputing these familiar arguments for their inconsistencies and contradictions, I will describe and ultimately contest the liberationist's central argument that hypertext is "intrinsically antihierarchical" (Landow, 1992, 128) and "inherently democratic and transnational" (Miller, "Literary Theory" 20). Finally, I will point to a more materially minded understanding of hypertext. In the following chapter, I critique hypertext theory's reliance upon word-based texts as the most important form of digitally interactive works and that the inclusion of non-linguistic media into a theory of

multimedia would need to think outside of linguistic-based theories of representation and meaning.

Breaking the Boundaries: From Print Culture to Electronic Culture

The central claim made by most hypertext theorists today is that the notions of scholarship, authority, and originality developed and strengthened over five centuries of print culture are threatened as we move from "the late age of print" (Bolter, 1991, 1) and enter the early age of the electronic word. The idea of the discrete, bound, and physical book that defines boundaries between the author, the reader, and other books will become a mere vestige of antiquated print technology as we increasingly adopt postmodernist and poststructuralist conceptions of decentralized textual networks, intertextuality, multivocality, multisequentiality, nonlinearity, and the writerly text, concepts which all promise a freedom from the alleged restrictions of the book. The argument continues something like this: From the papyrus roll, to the manuscript, to the printing press, boundaries now implicit in print culture have developed to establish and fix textual authority and knowledge. Among the advancements in technologies of the book, the printing press was the most significant. It brought the reproducibility of discrete books, meaning that the same words could be read by many people many miles apart. As such, knowledge could be disseminated and standardized much faster than when limited numbers of manuscripts meant the limited spread of knowledge over time and space. "It was the fixity of the printed word" explains Bolter, "that encouraged exacting textual criticism in humanistic scholarship and the drive for greater mathematical precision and descriptive accuracy in the sciences" (Bolter, 1992, 22). In addition, the distribution of

replicated texts helped build wider ranging reputations for authors and their works, which, in conjunction with the printed text's fixity, helped to strengthen the authority of the author and the text, and to distance the reader from both. The view of authority that develops within print culture, and which is still strongly prevalent today, is dependent upon the existence of books as fixed objects, ascribable to identifiable authors, consumed by readers, bound by covers, and considered single textual units normally made up of smaller units (chapters and pages), all with beginnings and endings.

According to the liberationist view, hypertext breaks the mold described in this account. Bolter sums up the promise (or threat) of hypertext well when he says, "Above all, hypertext challenges our sense that each book is a complete, separate, and unique expression of its author" (Bolter, 1992, 22-23). The authority of the author is contested by two elements of instability: the evanescence of text within a computer environment and the hyperlink itself. These elements of instability, it is argued, are emancipating "writers from the frozen structure of the page" (Bolter, 1991, 21), ensuring that "the reader is not *locked* into any kind of particular organization or hierarchy" (emphasis added; Landow, 1992, 13) and "liberating the text" from the inherent limitations of its container (Bolter, 1991, 21). So the argument goes.

The Evanescence of Electronic Text, Part 1: Producing Technology

One of the more effusive celebrations of the evanescence of electronic text comes from Richard Lanham's *The Electronic Word* (1993), where Lanham glorifies the visual malleability of computer text. He argues that electronic text is essentially unstable because it can be erased, enlarged, and changed according to the playful whims of author

and reader. Lanham's excitement over altering "the alphabetic/graphic ratio of conventional literacy" by formatting text with multiple typefaces, enlarging and reducing type size, and colouring his "colors of rhetoric," while suggestive of the naïve enthusiasm of a "newbie," illustrates the author's assortment of new visual effects for accentuating text. As Lanham states, "I can reformat a text to make it easier to read, or, using a dozen transformations, make it harder, or just different, to read" (Lanham, 1993, 5). Not to be left out of the fun, the reader of the electronic word gains the most with extensive new powers over the text:

> Electronic readers can do all the things that are claimed for them—or choose not to do them. They can genuflect before the text or spit on its altar, add to a text or subtract from it, rearrange it, revise it, suffuse it with commentary. The boundary between creator and critic ... simply vanishes. (Lanham, 1993, 6)

Lanham draws the significant conclusion here that the evanescence of the text motivates the reader to become more like a traditional author; hence, the reader's power over the visual appearance of electronic text challenges and breaks the print-based boundary between author and reader.

Electronic text, then, is just not the same as printed text. Unlike printed text with its fixity and permanence, electronic text is fragile and variable, existing in various levels of erasable computer memory as a collection of zeroes and ones, and always at least visually alterable once onscreen. For Lanham, this means that "The textual surface is now a malleable and self-conscious one. ... [It] has become permanently bi-stable" (Lanham, 1993, 5). In other words, writers and readers of electronic text become more

self-conscious of the merging acts of writing and reading as they oscillate between looking at and looking through the text.

Lanham's argument for the malleability of electronic text is hard to challenge for the simple fact that, in many ways, it's right: electronic text is indeed generally more malleable than print text. And this is a good thing, especially when we consider the physical nature of reading from a computer screen. Today's monitors, while superior to those used by Lanham when writing *The Electronic Word*, are still not as comfortable for reading long documents as most people would like. So it's physically comforting to know that we can adjust font and background properties to relieve eye strain. And Lanham's prediction that electronic text will stimulate increasing attention to the alphabetic/graphic ration of documents is coming true. With the development of the world wide web into an accessible and relatively inexpensive publishing venue, many amateur document designers are exploring the possibilities of visually-based expression. Indeed, the web version of the document you are reading now is an obvious example of an author manipulating the alphabetic/graphic ratio of a document for effect.[69]

Yet, while it is true that electronic text *in general* is more malleable, it is equally true that not all electronic texts allow readers to adjust font sizes and colours, but instead force the user to adopt more radical measures, such as lowering a monitor's resolution to increase the apparent screen font size.[70] In fact, the current trend in electronic document

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[69] See http://www.humanities.ualberta.ca/MakingLinksPublic/

[70] An example is *Understanding McLuhan*, a CD from Voyager Company which does not allow the end user to adjust the appearance of the text in any way at all.

design and publication is to move the power to control a document's visual appearance squarely back into the hands of the author and editor. In the early days of graphical user interfaces (GUI) to the Web, browsers such as Mosaic and then Netscape gave readers the ability to adjust a document's font, background colour, etc. While a publisher of a Web document could employ design structures, considerable command over the end result was placed into the hands (or browsers) of end users. Web document authors, left rather envious of the print medium's design precision, were discouraged by the inadequacies of the Hypertext Markup Language (HTML) for page design and by a lack of control over a document's base typeface and size, which were ultimately controlled by user-determined properties in the Web browser.

But as document designers began to grumble about the hard-coded limitations they faced over the appearance of their publications, new technologies were developed to restore more design control to the author and editor. Other electronic document technologies, such as Adobe's Acrobat and WordPerfect's Envoy, made bids to become the *de facto* standard for document distribution on the Web, but, even though these technologies gave publishers strict formatting control, they merely replicated print-based documents and could not compete with the simplicity and low cost of HTML document production and distribution. Instead, the HTML tagset was expanded to include new elements, such as the currently popular table which allows authors to position blocks of text with much greater accuracy and design than earlier methods. With the recent advent of Cascading Style Sheets (CSS) and Dynamic HTML (DHTML), authors are now able to determine typefaces and to position text and graphics with pixel-point precision, thereby substantially limiting the reader's power to modify the appearance of the text.

This trend toward authorial control over the appearance of the text shows no signs of abating as new technologies are developed and promoted to move the world wide web closer to becoming a dominant advertising medium like television or print, where precise control over visual effect is paramount. Lanham's assertion, therefore, that the instability of electronic text means the destruction of the "boundary between creator and critic" is quickly becoming a chimera.

Some may think it anachronistic to use the world wide web as an example to contest Lanham's position on electronic text. While the Web did exist in the late 1980s when he was writing *The Electronic Word*, Mosaic and other freely available GUI interfaces to the Web were not popularly available. All the same, Lanham's discussion, like so many other considerations of hypertext, relies heavily upon prediction and a utopian vision of the electronic future. Even Jay David Bolter recognizes his own tendency to idealism when he notes that his speculation on a "fully hypertextual library ... is surely a utopian vision" (Bolter, 1992, 23-24). But, even if we take into consideration the speed of technological development over the five years since the publication of *The Electronic Word*, we should still wonder why Lanham's vision failed to consider that authorial control would ultimately prevail with the spread of electronic technologies of the text into the marketplace. Perhaps it is because his speculations do not sufficiently consider the materiality of hypertext's production, distribution, and consumption, a strange criticism considering Lanham's lengthy consideration of Christo Javacheff's *Running Fence* (1972-1976), a multimillion dollar nylon fabric fence cutting through twenty-four and a half miles of Oregon farmland, to explain the significance of the material, social, and political elements of art production (Lanham, 1993, 48-50).

Ironically, while Lanham's discussion of *Running Fence* emphasizes material production, his understanding of computer mediated text privileges consumption over production and distribution by focusing on the consumer's production of the work in the act of consuming it. He almost entirely ignores the production of the technology he celebrates. The reader's power to reformat text is not inherent in the technology of electronic text; rather, it's a feature determined by those who develop software. As I pointed out in discussing the changing technologies of Web design, document technology is in significant part shaped by the corporate sector. To illustrate my point further, most new features being added to Web browsers are increasingly meant to satisfy the corporate imagination, as the recent advent of push technologies makes quite clear.[71] Lanham's strength in recognizing that the digitization of the arts defamiliarizes their delivery and therefore makes their materiality more apparent to the consumer is weakened by his underestimation of the technology industry's place in the development of communication technologies. No wonder he is able to claim that "We needn't worry about digital determinism" (Lanham, 1993, 51). He effectively eliminates the possibility by ignoring the existence of any determining agent outside of the consumer. While I too would encourage the rejection of technological determinism from an account of the relationship between culture and technology, I would also urge a similar rejection of cultural determinism. The directions of influence in the relationships between culture and

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[71] Microsoft's new Channel Definition Format (CDF) and Netscape's Netcaster are the latest push technology incarnations in what is sure to become a expansive element of the Internet.

technology, and between producers and consumers of technology is complex and multi-directional. Lanham's blindness to the wider spectrum of technological production prevents him from seeing the ways in which the production of technology helps to shape our consumption and, in turn, how cultural assumptions help shape the production of technology. Such blindness results in an inadequate explanation of electronic textuality, an explanation that depends upon and privileges only a single incarnation of electronic text.

The Evanescence of Electronic Text, Part 2: Ghostly Revenants

In their studies on electronic textuality, hypertext scholars generally share the postindustrial fascination for the efficiency with which computers store text as electromagnetic codes (machine readable) and retrieve it as text (human readable). The technology is certainly impressive, especially when one considers the power of processors and the capacity of storage devices available today, let alone the even more powerful processors and capacious devices of the future. Liberationist hypertext scholars, however, are just as enthusiastic about the evanescence of electromagnetically stored text as they are about the amount of text that can be stored or the speed at which it can be retrieved. For them, the evanescence of electronic text challenges the fixity of print and all of the assumptions and relations they argue are based upon that fixity.

Paradoxically, while this focus on the ethereality of electronic text is firmly based upon the material technology of electromagnetic storage, it functions to dematerialize electronic text. Jay David Bolter's understanding of electromagnetism, for example, focuses upon the physical processes of computer memory storage to emphasize the

distance between the computer user and the electronic text. "Text is stored in these devices [hard drives and optical disks] as strings of bits," says Bolter, "which are in turn realized as voltage differences in transistors, patches of magnetized material on disk or tape, or tiny dots burned into the surface of the optical disk" (Bolter, 1991, 42) Bolter continues,

> If you hold a magnetic or optical disk up to the light, you will not see text at all. At best you will see the circular tracks into which the data is organized, and these tracks mean nothing to the human eye. The human writer or reader needs a different device in order to examine electronic text, either a videoscreen or a printer. The text is filtered through layers of hardware and software as it passes from writer to reader, even if the writer is reading his or her own text. (Bolter, 1991, 42)

For Bolter, the text undergoes significant ontological slippage as it is translated from voltage differences and magnetic patches to strings of bits to videoscreen to print. At one end of the ontological spectrum, it exists as a printed text. At the other end, it exits as magnetic energy, hardly what we would traditionally call text. J. Hillis Miller, who echoes Bolter's description of computer storage technologies in "The Ethics of Hypertext," shifts the terms of this etherealization by calling it "a ghostly revenant" and "a fragile shade," as if an electronic text were some sort of afterlife for the deceased printed text (Miller, 1995, 30). With so many layers of technological mediation and an increasing etherealization of the text as it moves into computer memory, the text is "disembodied" (Miller, 1995, 30) and essentially disappears: "The bits of the text are

simply not on a human scale" and therefore "the reader or writer is hard put to identify the text at all" (Bolter, 1991, 42 & 43).

To claim, as both Bolter and Miller do, that the bits comprising an electronic text are "simply not on a human scale" is to remove electronic text far from the material world. Electronic texts are never the real thing, according to George Landow, who claims that "all texts that the reader-writer encounters on the screen are virtual texts" that "exist as a version created specifically for them while an electronic version resides in the computer's memory" (Landow, 1997, 22). Accordingly, electronic texts are always virtual rather than material. But what if we were to consider the dematerialization of the text from within the framework of the production, distribution, and consumption of printed texts? Instead of saying "Electronic texts are always virtual rather than material," I might say "Printed texts are always representations rather than originals." Considering the inherent difficulties in establishing textual origination—which version of a mass-produced text is its original?[72]—placing these statements in close proximity makes the similarities between them become apparent. If the ontological status of the electronic text and the printed text are the same in that the original is never accessible, then perhaps there are other parallels in the materiality of textual production. For instance, just as I do not physically see the information stored on the hard disk drive in my computer, I do not

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[72] Espen J. Aarseth discusses our tendency to imagine a stable version of the text behind the text. If the version of a printed text we hold in our hands is missing a page, we assume that an original version that includes the page exists, even if it does not (Aarseth, 1994, 51-86).

see the manuscripts or plates used to create Bolter's *Writing Space*, Miller's "Ethics," or Landow's *Hypertext*. The distance between a reader at a computer screen and the technology of computer storage is similar in effect to the distance between a reader of a book and the technology of a book's production. To recontextualize Bolter's reference to electronic text, "several layers of sophisticated technology must intervene between the writer and reader" and the printed text (Bolter, 1991, 43). The evanescence of the text that we see here elides the material conditions of its production.

Even though Miller is sensitive to the material production of books, he fails to bring this insight with any sophistication to his study of electronic text. Early in "The Ethics of Hypertext" he emphasizes that reading the Oxford World's Classics edition of Anthony Trollope's *Ayala's Angel* is affected by the materiality of the text:

> Not only is the text of the novel caught in the materiality of the book. It is also tied by way of its paper, cardboard, ink, and glue to the historical and economic conditions of its production and distribution. It was printed in such and such a place at such and such a time. It was part of a moment in English publishing history when one of the great academic/commercial English publishers made "classic" books in Western literature available in inexpensive form. (Miller, 1995, 29)

Miller's perceptive understanding of the socialization of the text includes issues of class, education, and colonialism when he notes that Oxford's World Classics "depended upon the existence of a large literate middle-class reading public in Britain" and that it functioned to spread the English language and culture through a marketing strategy of

global distribution to "cities once British colonies or part of the British Isles" (Miller, 1995, 29).[73]

Where Miller's analysis of the cultural politics of the production, distribution, and consumption of the Oxford World's Classics excels, his analysis of electronic texts falls short, signaling the strength of the assumption that electronic text is essentially evanescent. While Miller attempts a sociological analysis of electronic text, his conviction that electronic text "has a much more fragile, fleeting, and insubstantial existence" blinds him to many elements of its materiality (Miller, 1995, 34). Even his statements that electronic texts have a material history alternate between positive and negative versions. For instance, he claims that the electronic version of *Ayala's Angel* is "cut off from [the] signs of its historical context. Or rather, it is given a strange new historical placement" And again: "The novel exists not as embodied in material forms, or at least not as material in the same fixed way as a printed book" (Miller, 1995, 30). It's as if Miller is unsure of the historical and material context of electronic text. His reliance upon its evanescence precludes his recognition that the technology embedded in electronic texts is deeply historical.

The Oxford Text Archive's version of *Ayala's Angel* that Miller refers to is a case in point. What Miller does not observe about this version is that it was encoded to conform to the Textual Encoding Initiative (TEI), an application of the Standard

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[73] Miller lists the cities: "Glasgow, New York, Toronto, Melbourne, Wellington, Bombay, Calcutta, Madras, Karachi, Kuala Lumpur, Cape Town, Ibadan, Mairobi, Accra" (Miller, 1995, 29).

Generalized Markup Language (SGML). This speaks volumes about the historical moment of the publication of the text. For instance, the growing popularity of SGML as an electronic text markup language in the humanities signals an attempt to standardize electronic literary texts for academic use. Since the Oxford Text Archive is primarily a site for the storage of scholarly texts, it is likely safe to assume that the TEI tagged version of *Ayala's Angel* was produced by academics for academics, that the choice to digitize and tag the text was based upon a value judgement that *Ayala's Angel* is suited to academic consumption. A text prepared for academic consumption, and distributed on a self-proclaimed scholarly Web site—it "offers scholars long term storage ... of texts and corpora prepared by individual scholars and major research projects worldwide"—socializes the texts that it distributes by claiming that they are all of interest to academics. In addition, SGML is standard rather than a set of predetermined tags. As such, implementations of SGML, such as the TEI Document Type Definition reflect current trends and interests in textuality. Over time, the TEI will be reshaped and new DTDs will be designed to reflect changing attitudes and research interests within the humanities. In this way, then, an analysis of the markup of *Ayala's Angel* would no doubt reveal certain assumptions about our current concerns about document structure. On top of these social characteristics, the Oxford Text Archive, even if it is not associated with the Oxford University Press—a significant point in Miller's mind—is still invested with a certain amount of legitimizing authority by its association with Oxford University. Miller's point is not without value, for if he had chosen a text without any markup at all, then it would have been difficult indeed to historicize the text. Even knowing where the text was retrieved would, in such a case, offer little to go on. And so, while some electronic texts

may be evanescent, it remains that in many cases, just as printed texts are socialized by their modes of production and distribution, so too are electronic texts.

Miller's analysis also misses what seem like obvious parallels between the class- and language-based assumptions operating behind the means of distribution used by Oxford University Press (OUP) and those used by most online literary archives like the Oxford Text Archive. Just as the OUP assumed a "literate middle-class reading public," so too does any text distributed by the Internet, where access to the text is determined by access to the technology. Miller nods to issues of access, but he goes no further than a recognition that a certain democratization occurs "for those who have access to the Internet" (Miller, 32, 1995). This suggests that he sees a disparity between those with and those without access, or phrased in more current terms, between haves and have-nots. Unfortunately, he does not apply his class analysis of the OUP's assumptions of a middle-class consumer to electronic distribution of texts. If he had, he might have found that most people who have access to the Internet do so in one of only a few ways: they either have the disposable income necessary to own and maintain a home computer and Internet connection, or they have access to a computer at work, school, or other space outside the home. In most cases, those who have time enough to explore and learn how to navigate the Web, including where to find academically legitimized literary texts, belong to the middle classes, where leisure time, education, and income all exist in quantities great enough to make the Internet more accessible. So, just as the OUP depends upon and helps shape middle-class patrons, so too do sites on the Internet that distribute literary texts.

But an even larger assumption is at work here. It could be argued, for instance, that the Internet functions as a colonizing machine, spreading the gospel of postindustrialized and predominantly American culture, including the English language. While the source of this electronic colonialism cannot be justly located in the distribution of texts from the Oxford Text Archive—indeed, they distribute texts in many languages—the promotion of the Internet by governments and transnational corporations as the next primary medium of exchange simultaneously promotes English as the global language and Americanized culture as the global culture. In some ways, then, this is similar to the OUP's colonialist promotion of the English language and British culture in the first half of the twentieth century. The Internet, however, is a far more efficient machine than the marketing strategies of the OUP at mid-century, which could afford only limited numbers of globally positioned marketing nodes.

In short, the electronic version of *Ayala's Angel* is embedded in a more than "quasi-historical context" (Miller, 1995, 31); it is firmly set within a cultural moment that speaks in the same ways as the historical context of the Oxford World's Classics. Electronic text is not free from history, politics, or culture. It is not immaterial. It is a cultural production. Bolter's and Miller's dematerialization of electronic text prevents them from recognizing the degree to which the material conditions of production affect and are apparent in electronic text. Perhaps it could be argued that the evanescence of electronic text hides the markers of its production. Yet, just as literary scholars, in response to recent sociological studies of the book, have adjusted their perspectives to recognize the text as a sociological artifact, so too do scholars of electronic text need to adjust their perspectives to see the signals that mark electronic text in the same ways.

Theorizing the Link, or the Contradiction of Postmodernist Hypertext Theory

The liberationist view of hypertext is complicated by a central contradiction: at the same time that it argues that electronic text is immaterial, an argument that I have shown to ignore key elements in its production, it claims that hypertext materializes the essentially internal process of associative reading. Hypertext is dematerializing at the same moment that it is materializing. The first half of this paradox has already been discounted as unfounded. In order to dispute the second half of the paradox—hypertext as the physical manifestation of the cognitive processes of reading—I will begin with a short summary of how hypertext reading is popularly conceived by liberationist scholars of hypertext. Then, after illustrating how a poststructuralist understanding of reading is misapplied to the act of consuming hypertext, I will conclude with a critical assessment of the liberationist argument that hypertext is essentially emancipatory.

Theodor H. Nelson, who coined the term "hypertext" in the 1960s, defines hypertext as "non-sequential writing—text that branches and allows choices to the reader, best read at an interactive screen. As popularly conceived, this is a series of chunks connected by links which offer the reader different pathways."[74] Current conceptions of hypertext see it in similar terms. George Landow, for instance, describes it as "text composed of blocks of words (or images) linked electronically by multiple paths, chains, or trails in an open-ended, perpetually unfinished textuality described by the terms *link*,

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[74] From Nelson, Theodor H. *Literary Machines*. Swarthmore, Pa: Self-published, 1981. 0/2. Quoted in Landow, 1997, 3.

node, network, web, and *path*" (Landow, 1997, 3). Since hypertext offers readers multiple trajectories through either a single text or an entire collection of texts, liberationist critics claim that it differs radically from print technology, which, they argue, forces us to "read and write linearly" (Bolter, 1991, 142). The multisequentiality of hypertext, then, frees writers and readers from the "frozen structure of the page" (Bolter, 1991, 21), and infinitely multiplies the text into a "perpetually unfinished textuality." In effect, the reader creates potentially numerous distinct texts with each reading of the text. Therefore, not only does the reader become more of a writer, or what Martin E. Rosenberg dubs the "wreader" (Rosenberg, 1994, 274), but the text itself becomes less rigidly defined as a single unit embodying a single, unitary expression.

This is a key issue for liberationist hypertext scholars. As they see it, hypertext is the material substantiation of the Barthesian "text" and the more general poststructuralist concept of intertextuality. For Barthes, "the goal of literary work (of literature as work) is to make the reader no longer a consumer, but a producer of the text" (Barthes, 1974, 4). As I have just shown, this powerful notion that the "writerly" reader produces a text in the act of reading a work forms the heart of liberationist conceptions of hypertext: in following links through a hypertext, readers literally build a unique text, understood as one of many possible paths of connected links through the text. This common understanding postulates that hypertext is not just *like* the Barthesian text. It asserts that hypertext *is* the Barthesian text. According to Landow, "Roland Barthes describes an ideal textuality that precisely matches that which in computing has come to be called hypertext" (Landow, 1997, 3). In addition, "Barthes's distinction between readerly and writerly texts appears to be essentially a distinction between text based on print

technology and electronic hypertext" (Landow, 1997, 5). The claims grow into rather ludicrous appropriations of Barthes and Derrida when both Bolter and Landow assert that poststructuralists actually mean hypertext when they say intertextuality. For instance, after comparing the differences between print and hypertext to Barthes' distinction between the work and the text, Bolter asserts, "All that is left to say—what Barthes could not say because he did not know about computers—is that the paradigm for the work is a finely bound, printed volume, whereas the paradigm for the Text is a network in the computer's memory" (Bolter, 1991, 161). Landow goes one step further into the psyche when he refers to "Derrida's instinctive theorizing of hypertext" (Landow, 1997, 35). Regardless of their appropriation of Barthes and Derrida, Bolter and Landow contend that hypertext in effect materializes poststructuralist concepts of intertextuality.

This position, however, does not consider how it is possible that the essentially interior act of reading, described by Barthes and Derrida as highly associative and intertextual, can be materialized in the formal structure of a text. If anyone's associative reading is inherent in a hypertext, it's the author's, whose hard-coded links determine the possible paths through the document. Even then, for an author to include all the links that comprise the Barthesian text would be a monumental and essentially impossible task. While hypertext may indeed present us with new textual forms, it is erroneous to claim that its form substantiates the cognitive aspects of reading. Richard Grusin points to the extent of this fundamental flaw in the liberationist argument when he notes that a

> misreading has developed in regard to Barthes's poststructuralist distinctions between "work" and "text," or between "readerly" and "writerly" texts, both of which distinctions are also habitually cited as theoretical anticipations of the

> technology of electronic writing. For Barthes, as for Derrida, however, the "writerly" "text" is always already immaterial, allusive, and intertextual--even in print. (Grusin, 1994, 45)

Surely it is an illusion, or at the very least, a contradiction, to think that hypertext actualizes the internal process of reading that, according to poststructuralism, is true of all writing. Geoffrey Nunberg tries to demystify this illusion when he argues that, if hypertext is inherently intertextual and boundary-free in its material manifestation, then "there is a difficulty even in speaking of 'intertextuality' when the individuation of texts themselves becomes so problematic" (Nunberg, 1996, 106). While Nunberg exposes the difficulties of the liberationists' poststructuralist thesis, his response merely remystifies the issue. Using the world wide web as his example, he completely ignores the visible characteristics that distinguish Web documents. As Lanham makes clear in *The Electronic Word*, authors of electronic texts can now experiment with "the alphabetic/graphic ratio of conventional literacy" (Lanham, 1993, 5). And this is precisely what we find happening on the Web: sites are differentiated by their visual design, and therefore marked as distinct.

The issue I want to foreground here is not so much that the liberationist understanding of intertextuality is faulty, although this is certainly germane to my critique. What I want to argue is that this conception of hypertext, based as it is upon poststructuralist conceptions of intertextuality, is essentially idealized, and as such, disregards key elements in the everyday production, distribution, and consumption of hypertext. The only way that a hypertext system can be imagined as the materialization of intertextuality, is if the reader of the text has complete power to add links and text to

the system of documents. While this may be the case with Brown University's *Intermedia*, a system used extensively by George Landow and which forms the basis for many of his arguments about hypertext, it is certainly not true of the world wide web in its current instantiation. It is true that users can save online documents to their workstations, open them in HTML editors, and then create links within those documents, but the process is clumsy, and would prove difficult, time-consuming, and actually impossible as a means to consuming a large, complex hypertext document. To add to the difficulties, if the "original" online text were ever updated, those changes would not appear in the user-edited copy. Unlike the ease with which reader linking is possible in *Intermedia*, the process on the Web, while technically possible, is laborious and, ultimately, prone to breakdown. So, if the Web does not fit the definition of an ideal or "full hypertext system," then does this mean that it is not a hypertext system?

The problem with the liberationist theory of hypertext is that it privileges the production of the text by the reader's consumption of it and ignores or marginalizes authorial production of documents and the production of the technology itself. The world wide web *is* a hypertext system, but it does not materialize intertextuality as Bolter and Landow claim of hypertext. Authors can create highly intertextual hypertexts by including many links to exterior documents, or by building framed pages that include other Web documents within the perimeter of their own. But this form of production differs significantly from a reader freely adding limitless hyperlinks within a docuverse authored by other people. Indeed, as recent concerns about copyright and trademark on the Internet testify, producing a Web site actually illustrates the limits of hypertext rather than its supposed limitlessness. In a recent lawsuit in the United States, Ticketmaster

sued Microsoft for unauthorized linking to its site. Ticketmaster complained that Microsoft's Seattle Sidewalk offered direct links to ticket sales for Seattle sports teams, bypassing Ticketmaster's main home page. In another unrelated proceeding, The Washington Post Company filed suit against Total News Inc. for their unauthorized inclusion of Web documents from *The Washington Post* in the frames of Total News Inc. Web site. Total news did not copy and paste these documents directly into their own documents, they merely created a menu bar in one frame that linked to news sites in another frame. While these examples are explicitly concerned more with copyright and trademarks than they are with theories of intertextuality, they do illustrate what is sure to become a hotly disputed question about the world wide web: what constitutes the boundaries of a Web site? The question of just what determines the boundaries of a hypertext is not only relevant to literary issues surrounding reading; it is inherent in the material production of hypertext as it operates on the Web. Indeed, the material production of hypertext will increasingly be delimited as the rules and laws that govern copyright and trademarks in the world of print, television, and radio are adapted to the world of hypertext as it exists on the Internet. Hypertext does not exist in an ideal or utopian way.

The Authority of Hypertext: Whose Democracy?

So what are we to make of the central claim of the liberationist view that hypertext is "intrinsically antihierarchical" (Landow, 1992, 128) and "inherently democratic and transnational" (Miller, "Literary Theory" 20)? If liberationist arguments about the evanescence and intertextuality of hypertext fail to consider adequately the material

conditions of its production, distribution, and consumption, perhaps their consideration of the politics of hypertext will be more successful. It is reasonable to think so, since we normally assume that an analysis of the politics of cultural production will include a certain sensitivity to modes of production. Unfortunately, of the major studies on hypertext currently in circulation, there is not a satisfactory theorization of the politics of hypertext that considers its materiality.[75] In the following section, therefore, I will focus mainly on George Landow's consideration of the topic with the dual aims of illustrating the inadequacies of his theorization of the politics of hypertext and of pointing in a new direction where a politics can be understood in more satisfactory terms. I have chosen Landow's discussion for two reasons: 1) he is the most prolific and influential writer on hypertext today, meaning that his statements on hypertext politics have great currency, and 2) he is one of the few major hypertext scholars who actually attempts such a discussion. Indeed, he devotes an entire chapter to the topic in *Hypertext*.[76]

In the following description of hypertext, Landow points to many of the boundaries seemingly challenged by hypertext:

> The presence of multiple reading paths, which shift the balance between reader and writer, thereby creating Barthes's writerly text, also creates a text that exists far less independently of commentary, analogues, and traditions than does printed

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[75] There are, however, smaller studies in circulation that focus on the materiality of hypertext. See Paul Duguid (1996), Richard Grusin (1994), and Carla Hesse (1996).

[76] As in the other sections of this chapter, I refer to the second edition of the text, *Hypertext 2.0: The Convergence of Contemporary Critical Theory and Technology*.

> text. This democratization not only reduces the hierarchical separation between the so-called main text and the annotation, which now exist as independent texts, reading units, or lexias, but it also blurs the boundaries of individual texts. In doing so, electronic linking reconfigures our experience of both author and authorial property, and this reconception of these ideas promises to affect our conceptions of both the authors (and authority) of texts we study and of ourselves as authors. (Landow, 1997, 25)

In this paragraph from the early pages of *Hypertext*, Landow touches on four boundaries that liberationist hypertext scholars in general believe hypertext threatens. Here's a quick summary:

1) Hypertext breaks the boundaries between authors, promoting multivocality. This works in two ways: first, linked texts prepared by separate authors form a networked textuality with multiple authors; and second, since a reader can become an author and add links and text to a document, the original hypertext can also contain the voice of the "wreader."
2) Hypertext breaks the boundaries between the author and the reader. Readers actively construct the hypertext by choosing which links to follow and thereby create a unique text. In addition, some environments allow readers to modify the formatting of the text and even the text itself.
3) Hypertext breaks the boundaries between texts by linking them within a web of intertextuality. Rather than individual and distinct texts, we have a network of connections between texts.

4) Hypertext breaks the boundaries between elements of a text and is therefore nonhierarchical.

It is no wonder that such boundary breaking leads to so many claims for the democratizing effects of electronic text, hypertext, and the Internet. The challenges to these boundaries, which generally result from the destabilizing properties of the electronic environment I discussed earlier, support Landow's belief that "the history of information technology from writing to hypertext reveals an increasing democratization or dissemination of power" (Landow, 1997, 277). Hypertext disrupts a range of hierarchies of authority, from the text to the classroom to society at large.

Landow uses this understanding of hypertext as a base for his discussion of the politics of hypertext. At two points in *Hypertext*, he refers to Fredric Jameson's now familiar statement "that there is nothing that is not social and historical—indeed, that everything is 'in the last analysis' political" (Jameson, 1981, 20). The first reference comes in the introductory chapter to *Hypertext*, where Landow moves from Jameson into a short discussion of "the political contexts and political implications" of hypertext. Lanham uses Alvin Kernan's historical study of print, *Printing Technology, Letters, and Samuel Johnson* (1987), as a base from which to speculate about the future politics of hypertext. One is immediately struck by Landow's switch to a futurological mode when the politics of hypertext are everywhere around him in the present. Instead of asking "What are the currently visible effects of the switch from print to computer hypertext?" he asks, "If the technology of printing radically changed the world in the manner that Kernan convincingly explains, what then will be the effect of the parallel shift from print to computer hypertext?" (Landow, 1997, 30). In the five years between the publishing of

Hypertext and *Hypertext 2.0*, one would think that some of the political fallout from the gradual spread of hypertext, especially as it has developed on the Internet, would have become visible to Landow's normally acute eye. What about issues of access to technology? What about issues of haves versus have-nots? What about class, gender, race, age, education? Surely the ubiquity of the Internet in the media, in business, and in education is raising many politically hot issues. Landow's silence on these issues is especially curious once we discover that the new back cover copy reads, "Landow shifts the focus from Intermedia to Microcosm, Storyspace, and the world wide web." Perhaps Landow was unable to modify his earlier text because it focuses primarily on the democratic promise of hypertext, and the results he predicted in 1992 just have not begun to transpire.

Landow's attention to the politics of hypertext, however, is more extended in the chapter entitled, appropriately enough, "The Politics of Hypertext." In it, he makes the important recognition that "Technology always empowers someone, some group in society, and it does so at a certain cost" (Landow, 1997, 275). To demonstrate his point, Landow draws upon a variety of examples from history, describing first the role of technology in the redistribution of power during feudalism, then the introduction and eventual democratic distribution of writing and reading, and finally the compilation of hard-word dictionaries in the early seventeenth century. Throughout these examples, he perceptively emphasizes that "developments and inflections of such technology serve the interests of particular classes or groups," but that, over time, they have worked "to diffuse status and power" (Landow, 1997, 278). When Landow moves his focus to hypertext technologies, he severely restricts his broad emphasis on social groups to an analysis of

university students and teachers. While these groups warrant attention, they certainly do not cover the social or political spectrum Landow covers in his discussion of feudalism or his account of writing and reading, where he notes that "writing drove a sharp wedge between the literate and the illiterate" and, referring to Elizabeth Eisenstein, that "'Gutenberg's invention probably contributed more to destroying Christian concord and inflaming religious warfare than any of the so-called arts of war ever did'" (Landow, 1997, 277). These statements reveal the extent to which technology has society-wide implications broader than those within the modern post-secondary education system. Landow ignores the larger questions of social equity, choosing instead to reduce the cultural significance of hypertext to an apparent democratization of pedagogical relations.

One can only speculate about why Landow restricts his focus so sharply. In some ways, it feels as though Landow uses his historical account of writing and reading as an analogous speculation about the future of hypertext technologies. Regardless, his comparison of the two technologies is disturbing for the way that it uncritically accepts the uneven distribution of power during the introductory period of new communications technologies. Indeed, if the social diffusion of hypertext is like the diffusion of writing and reading, then we can expect an uneven distribution of power for some time, even if the spread of hypertext occurs light-years faster than the very gradual spread of writing and reading.

So, even if we were to limit discussion of the politics if hypertext to academe, we would need to consider how hypertext empowers some academic groups over others. The only way to perform this task is to consider the costs of computing. Landow assumes that students and institutions can afford the technology. While it is true that

students attending post-secondary institutions generally fit into the middle-classes, it is unsafe to assume that they are likely to own or have access to a computer.[77] Indeed, Landow's conception of access does not even consider the economics of access, or the class distinctions inherent in such an economics. To be fair, Landow does recognize that access is a serious concern. He says, "The vision of hypertext as a means of democratic empowerment depends ultimately upon the individual reader-author's access to enormous networks of information" (Landow, 1997, 286-287). However, by "access" Landow means the kind of access a reader has to texts: Does the reader have sufficient security to access all documents on the network? Does the reader have the right to add links to the texts? These issues of access, as important as they are, do not cover access to technology.

Landow assumes access to technology when he contends that electronic pedagogy liberates students from the power of an instructor's agenda and the institution's time and space, freeing them to explore their subjects more actively (Landow, 1997, 279-281). However, in order for this scenario to work, a student must either have a computer, which assumes a certain level of disposable income, or have access to a computer on campus, which constrains students to a time and space rather than freeing them from the constraints of the institution. In institutions where I have worked, the constraints on time and space are quite pronounced, since the institution cannot afford the number of

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[77] The InternetTrack survey for the 2nd quarter of 1997 contends that "Web users are educated and affluent." See http://www.ziffdavis.com/marketresearch/itrak_q2_2.htm for details.

computer labs desired by the student population. One option is, of course, to install numerous network connections across campus (at a cost far less than supplying an adequate number of computers) and to force students to buy networkable notebook computers.[78] Again, as this requires a certain financial affluence of students, it functions to limit those attending post-secondary institutions, and therefore proves undemocratic.

Even if we consider the tendency for price decreases that characterizes the computer industry, it remains that computing is expensive. In recent attempts by Intel, AMD, Apple, and other and hardware manufacturers to create inexpensive Internet-ready computers, we have seen prices remain between $1000 and $2000, a large expense for most. And if we are to experience the "full hypertext system" proposed by Landow and others, we will need higher end hardware than we normally find on desktops, let alone network computers or notebooks. According to Landow's description of the ideal hypertext, we would need a "large two-page graphics monitor" to permit the "opportunity to place several texts next to one another" (Landow, 1997, 5). The sort of monitor he imagines would be at least 21" diagonally (a 17" monitor cannot support a 2-page view where the text remains legible). In the summer of 2000, pricing of such monitors in Canada adds at least $1500 to cost of an average home computer system.

Once we widen the investigation of hypertext to include society at large, Landow's analysis of the politics of hypertext begins to weaken. His theory clearly privileges members of the middle-classes and higher who can afford to own computers and to attend post-secondary institutions. Landow is right to claim that "Technology

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[78] This strategy is being employed by Acadia University in Wolfville, Nova Scotia.

always empowers someone, some group in society, and it does so at a certain cost" (Landow, 1997, 275). Of the groups currently benefiting from hypertext technologies, academe stands out, where theories of hypertext continue to privilege the educated, moneyed classes. Hypertext theory, then, is potentially a conservative view that maintains, strengthens, and legitimates the status quo power relations between classes.[79] Indeed, rather than breaking boundaries as Landow suggests, liberationist hypertext theory conceivably strengthens them. In conclusion, then, where certain claims made by liberationist scholars of hypertext marginalize the importance of the material conditions of the production of hypertext, the liberationist notion that hypertext promotes democracy elides the material conditions of it consumption. And so, we find that the significant studies on hypertext that focus on its emancipatory possibilities fail to theorize adequately the materiality from which hypertext promises freedom. A more satisfactory politics of hypertext will consider how the material conditions of its production, distribution, and consumption lead to the privileging of particular groups. Just as the divisions I discussed in earlier chapters between theory and practice in the post-secondary education system in Canada help to maintain divisions between blue and white collar, low and high culture, so too does a theory of hypertext that dematerializes its subject. Instead, a theory that examines hypertext as a material technology and as requiring technological skill would reveal that the real politics of hypertextual practice is its

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[79] J. Hillis Miller, arguing that hypertext can be used to create predetermined links under the guise of freedom, also contends that hypertext can be "conservative in its implications" (Miller, 1995, 28).

potential to raise the profile of practice within our accounts of what constitutes the humanities and a humanities education. If we want to alleviate the social disparities that support the hierarchical arrangement of our society, including those supported by the humanities' privileging of theory over practice, then we need ask questions about who creates hypertext, where is it created, why is it created, and how is it created. Until we do, we will only realize a very limiting democracy that increases rather than decreases the distances we might hope to span with the promise of hypertext.

Chapter 4

What's the Story with Computer Games? Special Effects and the Performance of Multimedia

In the previous chapter I argued that many hypertext theorists dematerialize the physicality of computer interactivity and present it as the psychological actualization of post-structuralist conceptions of reading and textuality. In doing so, they tend to ignore the body[80]—the physical act of interacting with a computer—and prioritize the mind—the psychological act of reading.[81] I claim that this is a misguided strategy in an attempt to legitimize an area of humanities research that could be perceived by traditional humanities scholars as tainted by too great a focus upon the practical and the technical. I also argue that this dematerialization prevents theorists from imagining a politics of hypertext that includes the profoundly material nature of hypertext's production, distribution, and consumption. As a result, their politics of hypertext comes to signify

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[80] For a discussion of the body in hypertext see Keep, Christopher. "The Disturbing Liveliness of Machines. Rethinking the Body in Hypertext Theory and Fiction." *Cyberspace Textuality, Computer Technology and Literary Theory*. Ed. Marie-Laure Ryan. Bloomington, Indiana: Indiana UP, 1999, pp. 164 - 181.

[81] For a sustained critique of hypertext theorists' inadequate consideration of the psychology of reading, see Miall 1998 and 1999.

almost exclusively the disruption and redistribution of power relations between author and reader where, in their view, readers of hypertext become more authorial because they construct individualized texts through hypertextual navigation.

Even if we forget for the moment that hypertext has material properties signifying a politics of access, the redistribution of power between author and reader points to a cultural politics of consumption in which hierarchies of culture are arranged in part by how the work of art is physically consumed. Indeed, whether in response to a book, a dramatic performance, a musical concert, or a painting in a gallery, levels of audience participation often embody both the sign and result of a hierarchically arranged system of culture. For instance, audience participation is normally much higher at a pop music concert, where attendee activities range from frantic screams of appreciation, loud singing with the band, participation in crowd-run moshes, and other actions normally considered rude or vile in high culture settings, such as at a symphony concert, where a more sedate response is understood as a more sophisticated, tasteful, and cultured experience. Interactivity then, even when freed of its association with computers, often indicates how works of digital art are placed within hierarchies of culture.

Postmodernism's challenge to hierarchical arrangements of culture helps us to see these hierarchies as socially constructed rather than as the natural arrangement of cultural value, but the application of post-modernist theory to hypertext by many hypertext theorists fails to sustain this critique because it elides the materiality of computer interactivity. Hypertext theorists may be right that the consumption of hypertext implies a politics, but they focus attention in the wrong place. Hypertext is political not merely for its redistribution of power from the author to the reader, but more significantly for its

potential challenge to the relationship between modes of cultural consumption and the multiple divisions spanning high and low culture.[82]

This narrowly conceived politics results in significant part from a focus constricted to digitally interactive works based primarily upon written text. A more broad-ranging and analytically useful understanding of a politics of multimedia consumption is necessary, but can come only when we expand our analysis to include digitally interactive works that include or are substantially or entirely based upon non-word elements. As such, I will now stop using the term "hypertext" to describe digitally interactive works of culture, for the term implies an emphasis upon the written word. To this point in this study, I have been using "hypertext" in two ways: first, to refer to the theory developing around digitally interactive works that are primarily based upon written text, and second to refer to digitally interactive works that rely upon hypertextual links, regardless of whether these works are based primarily upon written or non-written elements. But if we are to resist the pitfalls that arise in hypertext theory's biases, then

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[82] George Landow, Michael Joyce and others do argue that hypertext has the power to challenge literary canons, but it would be an injustice to their work to suggest that they see hypertext as challenging divisions between high and low culture, especially when they both promote "serious" uses of hypertext. Landow's academic hypertexts normally focus upon canonized works and authors such as Tennyson's *In Memoriam* and Charles Dickens. Joyce's hypertext fiction is published mainly by Eastgate Systems whose motto is "serious hypertext." Joyce helped develop Eastgate's proprietary hypertext writing system called Storyspace.

we need to adopt terms which allow for a more inclusive and less literary-centred understanding of digital interactivity. "Hypermedia" and "multimedia" (I use "multimedia") are useful alternatives, for they avoid stressing one media type over others but still include digital interactivity, by which I mean the feedback loop that exists between a user and a computer during the experience or participatory performance of a digitally interactive work. It is the digital work's responsiveness—encoded in the work by its programmers—to a user's input that defines the work as interactive and its level of interactivity. Therefore, if we adopt the term "multimedia" over "hypertext," then we open up space for a theorization of digital experience beyond the linguistic but including the visual and the aural. Indeed, a theory of multimedia without such a bias towards the written word would make it easier to see a cultural politics of digital media built upon the divisions between mind and body, theory and practice, and written and non-written, for it would focus more attention upon the *action* in interaction.

In this chapter, I do not outline a new theory of multimedia; instead, I explore what a non-linguistic notion of multimedia would mean within the current environment of the humanities where biases towards the written word still predominate.[83] While my focus is the academic politics of multimedia, my observations apply to the wider politics of cultural consumption, especially in the context of divisions between mind and body, intellect and emotion, and art and entertainment. I begin by illustrating hypertext theory's

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[83] Research in Cultural Studies, Pop Culture, and Visual Culture are obviously less centred upon verbal text, but it remains that much work in these areas must be done to re-theorize the consumption of digital works.

linguistic bias and then argue that it is not unique to hypertext theory, but that it is a common assumption in the humanities. Rooted in the Cartesian duality that places mind over body, this hierarchically organized connection of linguistic texts to rationality and non-linguistic texts to emotion has a long history, perhaps as long as the history of print, but beginning at least with the Enlightenment. I do not summarize that history here, but I consider its late twentieth-century expression in response to cultural divisions between art and entertainment. In particular, I examine recently expressed perceptions that the well-read individual is in decline due to the rise of visual technologies such as television, film, and now multimedia, and that this necessarily means the dumbing down of culture. According to Mitchell Stephens' book title, we are witnessing *the rise of the image, the fall of the word*, a situation mourned by Neil Postman in *Amusing Ourselves to Death*, and, of course, expressed more generally since the 1980s in conservative responses to academic political correctness. Postman and those sharing his perspective argue that new media technologies are fundamentally changing the way we think because they are slaves to the entertainment industry, and that this change has necessarily led to an intellectual and cultural decline. The near-automatic association of multimedia with entertainment not only relegates most electronically delivered non-linguistic works to some lower position on the scale of culture. It also expresses the organizational function of the Cartesian mind/body division in the hierarchical arrangement of culture, and so implies that all non-linguistic works, not just works of multimedia, fall below the word, in both its print and oral form.

In the second section of this chapter, I return to multimedia and consider its relationship to entertainment, especially within the context of computer games. Probably

the most popular and widespread form of multimedia after the world wide web—if we can consider the entire web to be multimedia—computer games are also where we find some of the most technologically rich and sensationally stimulating examples of multimedia. I will argue that computer games potentially disrupt current cultural hierarchies and thereby represent an opportunity to question the linguistics-based theoretical frameworks that inform most humanities scholarship and that support and are supported by Cartesian hierarchies of mind and body.

Hypertext: What's in a Name?

There is a tendency amongst champions of hypertexts to defend their use of the term "hypertext" by assuming that most interactive digital works, regardless of how *multi*media they are, contain written text and therefore are fundamentally linguistic in nature. For instance, in *Of Two Minds: Hypertext Pedagogy and Poetics*, Michael Joyce defends his use of the term "hypertext" over "hypermedia" in this way: "I will use the term *hypertext* where *hypermedia* would do as well, since nearly all hypertext systems involve other media, and I know of no hypermedia systems that use no text."[84] It may be true that most works of multimedia contain at least some written text, even if only for rudimentary help or for the desktop icon, but Joyce's choice has quickly become dated as more and more works of multimedia are based significantly upon non-linguistic elements. In addition, Joyce seems momentarily to forget the combinatory nature of the medium,

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[84] Joyce, Michael. *Of Two Minds: Hypertext Pedagogy and Poetics*. Ann Arbor: U Michigan P, 1995, (40).

that it supports the bringing together of multiple media types. This is an odd elision for one who so creatively arranges written segments in an effort to encourage diverse combinations.[85] Indeed, it is multimedia's potential for difference that is so important to Joyce, but that he ironically works against in his preference for the term "hypertext."

George Landow is more generous in allowing for media other than written text, stating that "*Hypertext* denotes an information medium that links verbal and nonverbal information" (Landow, 3). He then proceeds to use "hypertext" and "hypermedia" interchangeably. But his bias towards written text is obvious. In describing how hypertext can include non-written elements, he states, "hypertext, which links one passage of verbal discourse to images, maps, diagrams, and sound as easily as to another verbal passage, expands the notion of text beyond the solely verbal" (Landow, 3). As inclusive as this may sound, it is worth noting the possibilities that it excludes. Landow's example assumes a root lexia that is word-based, and so words can be linked to words and to non-word objects such as images, sound, video, or animation. But Landow does not offer the example of non-word elements linking to other non-word elements. And his example's focus upon a base written lexia potentially disallows a link from image to written text, although I should give Landow the benefit of the doubt and assume that linking written text to image could incorporate a return link from image to written text.

This may seem a trivial distinction; however, Landow's bias for written text reappears in a lengthy footnote, added to the second edition of *Hypertext*, it seems, in response to unfavourable criticism of his rather slippery definition of hypertext. In the

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[85] See Joyce's *Afternoon, a story*, and *Twelve Blue* for examples of his hypertext fiction.

note, he claims that by "hypertext" he means "only one of at least five possible forms of the *digital word*" (emphasis added, Landow, 1997, 309, n3). He excludes "graphic representations of text" that "can be animated, made to change in size, [or] accompanied by sound" on the basis that it "cannot be searched, parsed, or otherwise manipulated linguistically." In other words, after claiming that hypertext and hypermedia are interchangeable, Landow performs an about face and excludes hypermedia projects which rely heavily upon non-written media, or even graphic representations of words without searchability. Adobe's Acrobat file format offers an interesting example here. Acrobat is a powerful multimedia environment in which documents from various software packages (word processors, spreadsheets, image editors, desktop publishing packages, etc.) are converted to a non-user-editable graphic format. The Acrobat document can then be distributed along with the freely available Acrobat reader. Word indexing is optional in preparing Acrobat files, so it is possible to create a document with liberal linking, but no searching mechanism. According to Landow's definition of hypertext, an Acrobat file with no search mechanism is not hypertext, regardless of the number of lexias and links in the document. Just where Landow draws the line between hypertext/hypermedia and non-hypertext/hypermedia is unclear. What is clear, though, is that by hypertext/hypermedia, Landow means something that is based primarily upon written-text and that can be manipulated linguistically. In other words, he does not mean multimedia at all.

Textual Bias in Theorizing Digital Media

Joyce's and Landow's terminology illustrates a long-held, deep-seated bias toward written text and against non-written representation. A dominant trajectory in hypertext theory since the 1980s, this bias has had the dual-edged effect of legitimating the study of digital media in the humanities, but of shaping this legitimacy within a linguistic context. Many have applied hypertext theory's understanding of the author-reader relationship to interactive works of visual art, but doing so tends to reduce the experience of the visual and aural to linguistic or narrative meaning.[86] For instance, Ann Morgan Spalter, in her otherwise excellent textbook *The Computer and the Visual Arts*, draws upon hypertext theory to explain the computer's challenge to "a fixed relationship between artist and audience" (Spalter, 376). Yet, her application of literary theory to the artist-audience relationship is not entirely convincing, for it elides any differences there may be between reading a written text and viewing a work of art, between being an interactive reader and being an interactive spectator. She moves without pause from hypertext's testing of literary theory, specifically Foucault's view of text as a "'system of references to other books, other texts, other sentences,'" to "interactive multimedia" as an "unprecedented venue for new relationships between artists and their audiences" (Spalter, 376). Ultimately, she ends up naming this relationship the "author-reader-*spectator*" relationship (Spalter 376, emphasis added), without considering the potentially very

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[86] Also see Lovejoy, Margaret. *Postmodern Currents: Art and Artists in the Age of Electronic Media*. Second edition. New Jersey: Simon & Schuster, 1997, especially pp 154 - 211.

useful differences between this triad and hypertext theory's more limited author-reader dyad. I will explore some of these differences later in this chapter, but suffice it to say now that hypertext theory's bias for written text does not ensure an uncomplicated move into the analysis of multimedia in general.

My criticism of Spalter is not meant to reproach her interdisciplinary application of literary theory. Indeed, the bulk of theoretical investigations of multimedia has come from literary theory-based perspectives on hypertext, and so it would be a serious mistake to ignore what they offer. And I need to emphasize that *The Computer and the Visual Arts* is a university and college textbook; as such it may sacrifice deep theorization to synoptic overviews. All the same, I join Espen Aarseth, who in a general criticism of the application of current theoretical models to digital expression, notes that

> the race is on to conquer and colonize these new [digital] territories for our existing paradigms and theories, often in the form of 'the theoretical perspectives of <fill in your favorite theory/theoretician here> is clearly really a prediction/description of <fill in your favorite digital medium here>. (Aarseth, 1999, 31)

Aarseth goes on to say,

> Instead of playing the combinatorial game and applying this or that paradigm to the new phenomena, my assumption is here that the new media call for new perspectives and conceptual frameworks; and that we must step back from our theories if we are to see something not already inscribed in them. (Aarseth, 1999, 32)

Spalter's uncritical application of hypertext theory to multimedia fits Aarseth's formula of an academic colonialist strategy. Aarseth is right that we need to step back from current conceptual frameworks to see what is new about multimedia, but his insistence that multimedia is something new that needs new theoretical models risks ignoring the dependence of the new upon the old and thereby succumbing to what Paul Duguid identifies as the supersessionist argument, in which "the new ... doesn't merely replace the old; it supersedes it" (Duguid, 68). To be fair to Aarseth, he recognizes his own possible naïveté, "since there can be no thought ungrounded by any theoretical context" (Aarseth, 1999, 32), and he does indeed rely upon literary theory, but with the goal to theorize what's new about new media. Regardless, the examples of Spalter and Aarseth speak to hypertext theory's paradox of interdisciplinarity, in which an environment promoted as inherently interdisciplinary and thereby critically aware of multiple media is treated with a linguistic bias that tends to homogenize media or ignore their unique properties rather than teasing out the significance of their differences.

Linguistic Bias and Visual Culture in the Humanities

It is important to note that a linguistic bias is not unique to hypertext theory, but is a common feature in the arts and humanities in general. Its expression comes out in many ways, including the portrayal of images as somehow infantile or regressive, the marginal way in which non-word-based cultural work is treated within word-based academic disciplines, and, in a related fashion, the shaping of scholarship by major theoretical paradigms.

Word/Mind/Intellect, Image/Body/Emotion

A general distrust of the image goes all the way back to Plato's condemnation of images as poor imitations of the real. As Mitchell Stevens notes, "The power of the visual has been disparaged and then rediscovered many times since: with the development of painting in the Renaissance (including the use of perspective); with the woodcut and the mechanical reproduction of illustrations, with the arrival of photography" (Stevens, 61). Indeed, the rise of new visual technologies in the nineteenth century, such as photography, aroused considerable suspicion. For instance, as William J. Mitchell claims in *The Reconfigured Eye*, nineteenth-century painter Paul Delaroche responds to the Daguerreotype—one of the earliest forms of photography—by saying "From this day on, painting is dead" (quoted in Mitchell, 1).

Some responses to photography and film suggest that our attraction to it is infantilizing. William Wordsworth thought that photos in newspapers and books signified "a backward movement ... from manhood,—back to childhood."[87] Wordsworth's association of the image with childhood assigns the visual to the lower echelons of intellectual activity—the popular taste for the picturesque. In works such as "Tintern Abbey," he associates visual pleasure with the "coarser pleasures of my boyhood days" when he had no "interest/ Unborrowed from the eye" (l.73 and ll. 82-3). The value of the visual for Wordsworth comes in using it as a stimulus to the deeper thought, or to "a sense sublime/ Of something far more deeply interfused" (ll. 95-6). Others use the

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[87] Cited in Stevens, Mitchell. *The Rise of the Image, The Fall of the Word.* New York: Oxford UP, 1998, p. 61.

connection of childhood with visual pleasure to launch an attack on visual culture. Almost two centuries after Wordsworth, Neil Postman compares the fast-cut movement of television images to "the child's game of peek-a-boo" (Postman, 77) and Fredric Jameson argues within the context of film that reading becomes "some superstitious and adult power, which the lowlier arts imagine uncomprehendingly, as animals might dream of the strangeness of human thinking."[88] For Jameson, not only does reading written text distinguish the adult from the child, it also distinguishes the human intellect from the animal body, whose predilection for visual pleasure makes the visual, in Jameson's word, "*essentially* pornographic."[89] In other words, Jameson organizes reading and viewing along the binary lines of adult/childhood, human/animal, intellectual/body.

One of the most clearly articulated formulations of a hierarchical arrangement of reading and viewing comes from Neil Postman's *Amusing Ourselves to Death*, his critique of television culture's attack on print culture. Arguing that "the decline of a print-based epistemology and the accompanying rise of a television-based epistemology has had grave consequences for public life, that we are getting sillier by the minute," Postman relies upon a parallel arrangement of media and intelligence where the word, mind and intellect sit above image, body and emotion (Postman, 24). His stated focus is on television, but he frequently slips into a broader condemnation of visual culture in general. Early on in his book, he defines intelligence as relative to a culture's dominant mode of communication, stating that "what a culture means by intelligence is derived

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[88] Cited in Mirzoeff, *An Introduction to Visual Culture*. 11.

[89] Cited in Mirzoeff, *An Introduction to Visual Culture*. 11.

from the character of its important forms of communication" (Postman, 25). Rather than give a short definition of print culture, as he does for oral culture, Postman urges his readers on to self-reflection, asking them to consider three key characteristics of the reading subject: the body, visuality, and sensuous pleasure:

1. The Body

> You are required, first of all, to remain more or less immobile for a fairly long period of time. If you cannot do this ... our culture may label you as anything from hyperkinetic to undisciplined; in any case, as suffering from some sort of intelligence deficiency. (Postman, 25)

Postman dissociates the body from intelligence, suggesting that only through disciplining the body are we capable of intelligence in a print culture. In Jamesonian terms, we must sacrifice the animal body to the human intellect.

2. Visuality

> You must also have to learn to pay no attention to the shapes of the letters on the page. You must see through them, so to speak, so that you go directly to the meanings of the words they form. If you are preoccupied by the shapes of the letters, you will be an intolerably inefficient reader, likely to be thought stupid. (Postman, 25)

In this case, stupidity comes from close attention to the visual. But are the shapes of letters always irrelevant? Or do they sometimes carry as much meaning as "the meanings of the words they form"? With the advent of the world wide web as a personal publishing space, typeface has increasingly come to signify personal expression for those

who experiment with new typographic technologies. I suppose someone who used a decorative typeface for a serious argument might be accused of deflating their purpose, but that does not necessarily mean that the typeface has not been used to carry meaning. And what about the arrangement of the letters on the page? Words arranged in narrow columns with large, bolded titles may suggest journalistic writing and thereby influence one's reading. Certain visual arrangements of words that suggest poetry do the same. In other words, we do pay attention to the shapes of the words on the page, and they do carry meaning.

3. Sensuous Pleasure

> If you have learned how to get to meanings without aesthetic distraction, you are required to assume an attitude of detachment and objectivity. This includes your bringing to the task what Bertrand Russell called an "immunity to eloquence," meaning that you are able to distinguish between the sensuous pleasure, or charm, or ingratiating tone (if such there be) of the words, and the logic of their argument. (Postman, 25 - 26)

True enough, in certain situations with certain written texts it is important to distinguish between the sensual pleasure of reading and the logic of an argument, but Postman implies that including sensuous pleasure in one's writing is a rhetorical move that merely muddies what could otherwise be a clear argument, an odd implication from one whose writing is sometimes rather emotionally charged. Also, Postman suggests that sensuous pleasure can always be separated from the logic of an argument. But can't the sensuous pleasure of prose bring it meaning? Regardless, Postman's understanding of the reading

subject is based upon a mapping of the hierarchical arrangement of print culture above visual culture onto divisions between mind and body, intellect and emotion. Indeed, his fascination with the connection between images and stupidity brings him to say, "In a print-culture, we are apt to say of people who are not intelligent that we must 'draw them pictures' so that they may understand" (Postman, 26). He does not recognize how such an adage reveals the linguistic bias that a serious study of visual culture would work to deconstruct.

Disciplinary Organization of the Humanities

The disciplinary organization of the humanities is due in some part to a bias for linguistic text, even in the face of the recent moves towards interdisciplinarity. But it is worth noting the role of the disciplines in establishing the academic legitimacy of non-linguistic works of music, film, dramatic performance and visual art. Take Film Studies as an example. Its academic success as a stand-alone subject area is due in part to its development within departments of English, where film is treated mainly as narrative using analytic tools common to literary study. Drama is also dually situated in that plays can be studied in English departments as printed texts as well as in Drama programmes as dramatic performance. Certainly, music, film, drama, and the visual arts are now legitimate areas in the arts and humanities, but they take a symbolic backseat to the disciplines that focus on printed texts, especially in terms of the most favoured modes of academic production. I am not arguing that these areas should never be studied through the lens of linguistics-based theory. I am arguing, however, that a linguistic

understanding of visual culture has helped hierarchize the academic study of cultural work and marginalize aspects that are less linguistic or narrative than written text.

Theoretical Models

Without a doubt, part of the academic disciplining of the arts and humanities comes from the theoretical models that inform research. In the last half of the twentieth-century, humanities research has been dominated by linguistics-based structuralist and post-structuralist theory, which helps to explain the modern lineage of a linguistic bias. Ironically, W.J.T. Mitchell argues that what Richard Rorty dubbed the "linguistic turn" is actually a sign of a "pictorial turn":

> What makes for the sense of a pictorial turn ... is not that we have some powerful account of visual representation that is dictating the terms of cultural theory, but that pictures form a point of peculiar friction and discomfort across a broad range of intellectual inquiry (Mitchell, WJT, 13).

In an effort to distinguish the visual from the linguistic, Mitchell argues that

> *spectatorship* (the look, the gaze, the glance, the practices of observation, surveillance, and visual pleasure) may be as deep a problem as various forms of *reading* (decipherment, decoding, interpretation, etc.) and that 'visual experience' or 'visual literacy' might not be fully explicable in the model of textuality (Mitchell, WJT, 16).

Mitchell's voice is part of a growing chorus of dissatisfaction with literary theory as a basis for understanding the visual. As Aarseth possibly overstates it,

> the prevailing attempts to rejuvenate and relocate existing theories by insisting on their relevance for the new media and their largely unsuspecting users, is a 'colonialist' strategy that is always a demonstration of (unnecessary) power and often a misreading of the theory being used. (Aarseth, 1999, 32)

In her urgent critique of the "'linguistic turn' in contemporary thought," Barbara Maria Stafford argues that "The totemization of language as a godlike agency in western culture has guaranteed the identification of writing with intellectual potency" (Stafford, 5). For Stafford, this has "resulted in downgrading sensory awareness to superficial stimuli and false perceptions" (Stafford, 5).

Thinking about Multimedia

The question remains, then, how to think in inclusive terms about cultural works of multimedia without succumbing to the temptation of a perspective limited, first, by the organization of culture according to Enlightenment arrangements of mind and body and, second, by the unique qualities of a single medium or art form. Ultimately, this may be an impossible task given that the scope of multimedia works is so remarkably wide and that they draw upon diverse and overlapping traditions and original models, ranging from literary forms like the novel, oral forms like epic poetry, visual forms like painting, graphic design, and cartoons, dramatic forms from the stage, cinematic forms from the screen, and forms of play like sports, competition, carnival, and games. But because multimedia draws from such a wide range of models and media, we need to build a theoretical framework that does not reduce all phenomenological experience to language, but that also considers the unique properties of the visual and the aural and their

combination into works of multimedia. As a category of multimedia, computer games draw heavily from most, if not all of the forms I list, and so prove a particularly rich grouping against which to test and modify current theoretical perspectives, create new models, or combine the familiar with the new.

In the following section, I examine computer games as cultural works, by which I mean objects of creative and artistic expression that exhibit the norms, fears, desires, stories, contentions, and assumptions common to a culture and its sub-cultures. My goal is twofold: I will demonstrate the inadequacy of literary theory to understanding our experience of computer games and, by implication, of multimedia in general. A linguistics-based theoretical framework cannot, I argue, adequately conceptualize the immediacy of the visual and the aural or the experience of special effects, which I name the sublime. I will also consider computer games as entertainment and the politics of legitimate humanities scholarship a study of computer games implies. Although most often understood as merely entertainment—an understanding which does not preclude their study as works of culture—computer games are much more than amusement. They are a hybrid of traditional art forms, but they are also a space where we find the most unique and interesting examples of digital interactivity. Computer games are also popular culture. For high culturists, they represent all that is bad about popular culture: they are popular; they are seemingly mindless entertainment rather than mind-expanding and self-enlightening high art; they are marketed mainly to immature youth rather than mature adults; they are the source of rocketing profits for the entertainment industry; they are primarily visual; they lack strong narrative and character development; they assault the mind with endless, banal images of violence; they assault the body with high

demands for physical response like twitching fingers on keyboards and jerking hands on joysticks; and, perhaps most damning of all, they are hi-tech. For all of these reasons and more, computer games are worth close scholarly attention.

Thinking About Computer Games

To date, most scholarly work on the cultural significance of computer games has focused mainly on three issues: history, gender, and narrative. While important to any consideration of any cultural genre, I do not add much to an historical understanding of computer games; instead, I draw upon a short historical period of computer gaming in an effort to understand the experience of playing computer games and to contribute to the future of their academic study. And I do not add much, if anything, to the study of gender in computer games, although I see this as an area needing much more work, especially with the advent of gendered computers and software from Mattel (Barbie and Hot Wheels computers), the appearance and disappearance of manufacturers of girls' computer games like Brenda Laurel's Purple Moon, and the phenomenal success of the Lara Croft character in Eidos Interactive's *Tomb Raider* series.[90] I do, however, consider narrative-based studies of computer games, the most significant coming from Janet Murray in *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* and Espen Aarseth in *Cybertext: Perspectives on Ergodic Literature* and "Aporia and Epiphany in

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[90] For a collection of essays on gender and computer games, see Cassell, Justine and Henry Jenkins. *From Barbie to Mortal Combat: Gender and Computer Games*. Cambridge, Mass.: MIT Press, 1998.

Doom and *The Speaking Clock*: The Temporality of Ergodic Art." Murray and Aarseth both see computer games as examples of narrative. Murray argues that computer games and immersive environments represent potentially new narrative forms; Aarseth explores new theoretical models for understanding cybertextual narrative, or what he calls ergodic literature, which includes computer games. Their arguments are important and convincing, but I contend that they express a limited understanding of computer games, and potentially break Aarseth's own warning against fitting a round peg (new forms of digital art) into a square whole (theories established upon older forms). I do not claim to have a brand new square peg; instead, I bring yet another framework to computer games, but one I think offers a more natural fit. I draw upon recent studies in science fiction film that focus upon the role of special effects in forming a visual logic that takes precedence over a narrative logic that depends heavily upon linguistic-based understandings of culture.

I should pause to state some serious limitations of my argument. Not all computer games depend as heavily as others on visual and aural effects, yet many of the most popular are also the most graphically and aurally rich, suggesting that sensual stimulation is a key element in the computer gaming experience. That said, a granular study of their special effects is all but impossible given the many intersecting genres of computer games available, including action, adventure, first-person shooters (FPS), puzzles, role-playing games (RPG), scenarios, simulations, sports, and strategy. The games I refer to most often—a blend of action, adventure and strategy—are those most likely to be included by Aarseth and Murray as examples of cybertextual/cyberspatial narrative, with one significant difference. I do not consider word-based games. My

reasoning is rather simple: I want to explore what narrative-based studies of computer games miss within the context of highly visual computer games. My belief is that graphics-based games are different from word-based games, and that this difference is significant and worth exploring.

Narrative, Ergodics, and Special Effects

Espen Aarseth's study of computer literature, *Cybertext*, is one of the first and the only extended examination of digital narrative that does not rely upon structuralist and post-structuralist literary theory to offer pre-defined answers to the questions raised by multimedia narrative, or what he calls ergodic narrative. According to Aarseth, "Ergodic phenomena are produced by some kind of cybernetic system, i.e., a machine (or a human) that operates as an information feedback loop, which will generate a different semiotic sequence each time it is engaged" (Aarseth, 1999, 32-3). The reader of ergodic narrative "effectuate[s] a semiotic sequence, and this selective movement is a work of physical construction that the various concepts of 'reading' do not account for. ... In ergodic literature, nontrivial effort is required to allow the reader to traverse the text" (Aarseth, 1997, 1). Throughout the course of *Cybertext*, Aarseth offers several examples of ergodic narrative, ranging from hypertext fiction to adventure games, and from computer-automated literature to Multi-User Dungeons (MUDs). The most important of Aarseth's ergodic genres for this study is the adventure game, but before considering it in particular, it is important to note that the genres Aarseth selects are all primarily linguistic. He does not completely avoid graphical genres—he considers the 3D first-person shooter *Doom*—but he clearly prefers those that are based upon words.

Aarseth's frustration with scholarly criticism of the adventure game stems from the lack of serious academic attention given to computer games and "sparse and unconcerted" applications of particular concepts of narrative. First, he notes how easy it is to dismiss the adventure game because it is "too easily identified as 'entertainment' (correctly, but irrelevantly) to be eligible for scholarly attention from literary theory and criticism" (Aarseth, 1997, 109). Hypertext, on the other hand, is more easily accepted by academics because it more closely matches traditional literary forms like the novel. Yet, Aarseth identifies in those who deign to study the adventure game a tendency to draw upon reader response criticism to argue a "narrative vacancy" in adventure games based upon "the semantic gaps in the text that the reader must fill" (Aarseth, 1997, 110). For Aarseth, these "standard concepts of narratology are not sufficient to explain the literary phenomena of adventure games, and certainly not their difference from other types of literature" (Aarseth, 1997, 111). These gaps are not the same semantic gaps from reader response criticism, but "they are used as a filter, in which only the 'correct' response lets the user proceed through the text (Aarseth, 1997, 111).

These filtering gaps are vital to Aarseth's theory of ergodic narrative. Indeed, one of his most original contributions to a new narrative understanding of computer games comes from his conceptualizing these gaps as "the dialectic between aporia and epiphany" (Aarseth, 1999, 38). Normally understood as "informal structures, semantic gaps that hinder the interpretation of the work," aporias in computer games are "formal figures, localizable 'roadblocks' that must be overcome by some unknown combination of actions" (Aarseth, 1999, 38). Discovering the solution to an aporia leads to an epiphany and a continuation of the game to the next aporia. The aporia-epiphany dialectic is

essential to the structure and experience of any computer game. Indeed, it forms "the basic structure of any game" (Aarseth, 1999, 38). Without it, there is no game play.

Aarseth's challenge to narrative understandings of computer games is very useful, but for all his desire to break free from the "colonialist strategy" of relocating current theories, he still focuses upon narrative as the single most important element in the experience of game play. His attachment to a strongly literary concept of computer games continues in his expression of disappointment in the genre's weak character development. For Aarseth, "computer games seem dominated by either completely robotic villains (such as the nonplaying characters in *Doom*) or are completely unpopulated (and therefore, in my opinion), utterly boring spaces (*Myst*)" (Aarseth, 1997, 110).

Aarseth's reliance upon narrative and character as key elements to understanding and evaluating computer games elides the role of non-narrative special effects in the player's experience. His condemnation of *Myst* for its near absence of characters completely misses the reason for *Myst*'s success: it is a masterpiece of multimedia problem-solving based upon rich visual and aural representation. Indeed, a significant part of the joy of *Myst* and its sequel *Riven* comes in simply exploring their rich environments. In his recent analysis of the wildly popular *Doom*, Aarseth does note the graphical nature of the game, but he grossly undervalues its importance. After giving a short analysis of the game's significance in the history of 3D gaming, he states,

> Graphically, the game is crude, but effective (the players often duck as missiles fly toward them on the screen), and the use of sound is especially dramatic, with the rasping breath of the protagonist and the horrible grunts of nearby, but yet

> unseen monsters. The sheer intensity of the game play is far more striking than the blood effects and the violence, which are repetitive and subrealistic. (Aarseth, 1999, 37)

Rather than deepen his discussion of visceral responses to special effects, Aarseth immediately switches to the ergodic principles of *Doom*. Oddly, when he turns his focus from word-based adventure games to graphics- and audio-rich adventure games, his theoretical framework does not shift at all. It remains focused on the narrative structures of the game, as if visual and aural effect, if worth considering at all, are little more than devices for raising the intensity of narrative play. Aarseth is right to note the importance of special effects in raising the intensity of the gamer's experience. Yet, in his challenge to examinations of ergodic narrative, he does not wish to change the understanding of computer games *as* literature; rather, he just wants to alter it a little.

Janet Murray is far more attuned than Aarseth to the importance of visual and aural effect in computer games. She clearly understands the draw of sensory immersion within digital environments, explaining that the "experience of being transported to an elaborately simulated place is pleasurable in itself, regardless of the fantasy content" (Murray, 98). Yet, she too longs for strong narrative and character, hoping that these are the incunabular days of digital narrative and that, as technology advances, so too will the type and quality of cyber-narrative.

In *Hamlet on the Holodeck*, according to the cover copy, Murray explores "the unique properties and pleasures of digital environments and connects them with the traditional satisfactions of narrative" (Murray, back cover). She celebrates current examples of cyber-narrative, and postulates what future works might look, feel, sound,

smell and possibly even taste like. Opening with an extended description of a holodeck episode from *Star Trek: Voyager*—she refers back to this frequently throughout the course of her book—Murray excitedly forecasts thrilling new modes of narrative, modes that promise deep levels of sensory immersion, powerful user agency, and intense satisfaction, all brought to us by new computer technologies wrapped within the conventional traditions of narrative. The holodeck scene works well as a summary of Murray's project: a Charlotte Brontë inspired story cast within a hologram room where all physical sensation seems utterly real and all characters seem entirely convincing, not only in their physical dimension, but also in their personalities. For Murray, the holodeck is the ideal future of narrative in cyberspace: complete immersion within a reader-influenced, strongly imagined narrative.

Murray's investigation into cyber-narrative focuses closely upon new computer technologies for sensual stimulation. In her chapter on the "Harbingers of the Holodeck," she quickly moves from the multiform story, "a written or dramatic narrative that presents a single situation or plotline in multiple versions" (Murray, 30), to the immersive entertainment environments of amusement park rides, 3D and IMAX films, virtual reality installations, and computer games. Murray's interest here is to establish the many new ways in which our bodies are stimulated and our minds tricked into believing artificial phenomena as reality. As exciting as she finds these immersive thrills, however, she worries that they lack narrative content, and claims that most viewers feel the same. In her discussion of feature film-based amusement rides, such as *Back to the Future* and *Aladdin*, she claims that "movie-rides are providing evidence that audiences are not satisfied by intense sensation alone. Once people go 'into' the movie, they want more

than a roller-coaster ride; they want a story" (Murray, 50). As much as I might like to agree with Murray, she offers no evidence of this desire, other than to note that movie-ride developers are "expanding the duration of the rides and are adding more characters and incidents to them" (Murray, 50). Using *Aladdin*'s incorporation of the visitor into the story-telling as an example of this new direction, Murray reveals her own bias for narrative-based entertainment, saying, "The Aladdin model suggests the possibility of a new kind of movie-ride, an adventure experience that is driven by the guest's curiosity and the beauty of the explorable world rather than by rushes of adrenaline" (Murray, 50). Even though Murray notes the power of the visual experience, she undervalues the experience of "rushes of adrenaline." Without much evidence for a common desire for more narrative, it is hard to accept Murray's argument here, even if we do believe strongly in the power of narrative. It seems as if Murray sees her own desire for narrative as indicative of a more universal desire.

Murray's preference for narrative over "rushes of adrenaline" surfaces again in her discussion of computer games as "the greatest creative effort in digital narrative" (Murray, 51). Complaining that the "narrative content of these games is thin" and that they rely upon "sketchy and stereotypical characters," she suggests that computer games are in some way anti-narrative, that "in many maze-based games the story works against involvement in the game" (Murray, 51). Narrative intrusion is evident not only in maze-based games, but it generally exists in most computer games involving a story line. Narrative is most intrusive when it interrupts sustained game play, often in the form of cut-scenes (screens of text, animation, or video) used to placate the player while the next level loads itself into memory, or as long pre-game preparation scenarios where players

are given the game's narrative shell while buying vehicles, weapons, and other supplies needed for game play or while going through training sessions meant to teach them how to play the game. For some players, narrative screens and cut-scenes merely interrupt the action, and so they end up "turning the story segments off altogether" if they can (Murray, 52). These pauses in game play seem the antithesis to reader response criticism's notion of semantic gaps, and they clearly are not examples of Aarseth's aporia-epiphany dialectic, for they do not help the game to proceed. They stall its progression. For Murray, however, they only represent the trouble with narrative in computer games. Rather than explore the significance of this anti-narrative component, Murray merely laments its existence: "Although economic and social forces may never move the established game industry far past the lucrative shoot-'em-ups and puzzle mazes, there is no reason why more sophisticated developers could not make stories that have more dramatic resonance and human import to them" (Murray, 54).

Murray's right. Technically there is no reason why games with deeper and more seamlessly integrated narratives could not be developed. Yet, if computer games are so weak in narrative, and if, as Murray implies, they would be better with stronger narratives, then why is the computer game industry so successful? Surely game developers are creating something that players like, and, if it isn't story line and character, then there's something else that moved kids and adults to spend over $4.2 billion on video games in 1999.[91] It is true that many game manufacturers have been

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[91] Interactive Digital software Association, "Sixty Percent of all Americans Play Video Games, Contributing to the Fourth Straight Year of Double-Digit Growth for the

developing games with deeper narrative and character development, and this is reflected in the host of annual computer game awards. For instance, to be considered for CNET's annual game of the year, the game

> had to do more than advance the state of the art in its particular genre—it had to advance the state of the art of gaming as a whole. Some games accomplished that by putting a unique twist on a tried-and-true formula; some by wrapping great game play around a *compelling story*; some by taking gamers' expectations for what a game of its type should be and delivering something completely and tantalizingly different. What each of these games has in common is awesome atmosphere, fantastic replay value (even if they had no multiplayer element), and most important of all, they are *fun*. (emphasis added)[92]

For CNET's Gamecenter editors, narrative is important to game play, but no more important than graphics and sound for creating an "awesome atmosphere."

GameSpot's annual Best & Worst awards also recognize the value of narrative in computer games, but of their eight special achievement awards, only one goes to the Best Story while no less than four cover special effects (audio, music, artistic graphics and

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Interactive Entertainment Industry," Press Release, April 2000, http://www.idsa.com/releases/4-21-2000.html, accessed April 2000. Figures are in US dollars.

[92] Gamecenter Editors. "Game of the Year, 1998." *Gamecenter*. http://www.gamecenter.com/Features/Exclusives/Awards98/ss14.html (accessed May 2000).

technical graphics).[93] Even GameSpot's review of its 1999 Best Story award winner, *Planetscape: Torment*, focuses mainly upon the visual and aural qualities of the game, moving from its graphics engine and art work to its scenery and special effects to its interface and close-up isometric perspective before even mentioning its "original plot, well-written, descriptive dialogue, and likeable characters."[94] Even though the story line is apparently so strong in *Torment*, the reviewer gives it rather faint praise: "It's fortunate that Torment's dialogue reads well, because there's a lot of it to read … You might wish the game had a more frequent tendency to show-not-tell; however, its combination of great graphics and writing is generally very effective" (*ibid.*). Written narrative seems somehow out of place for the reviewer. Rather, it is the thrilling experience of dynamic graphics that is most important to experiencing the game.

One of the most successful computer games of all time, Valve's *Half-Life* (1998), has also been widely praised for its use of narrative. As one game reviewer writes, "Unlike other first person shooters…, the story is not abandoned in the middle of the game for bigger weapons and constant mayhem."[95] Instead, the story line develops as the player reaches new levels in the game and learns more important narrative details from

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[93] For GameSpot's *The Best & Worst of 1999*, go to http://www.gamespot.com/features/1999/index.html (accessed May 2000).

[94] Kasavin, Greg. "Planetscape: Torment." *GameSpot*. http://www.gamespot.com/rpg/torment/review.html (accessed May 2000).

[95] Hubble, Calvin. "Half-Life, Not Hal Bad." *Game Revolution*. http://www.game-revolution.com/games/pc/action/half-life.htm, accessed May 2000.

dialogue with friendly characters and overheard conversations. However, even though the story line is sustained more seamlessly across the duration of the game, the narrative in *Half-Life* remains rather simplistic—government nuclear experiments go wrong, monsters appear, and government tries to cover it up—and secondary to the actual game play itself—destroy progressively bigger enemies, solve progressively harder problems.[96] And, contrary to the reviewer's praise for *Half-Life*, players do indeed gain bigger weapons over time, but, more significantly, the magnitude and visual splendour of the monsters to battle and the puzzles to solve also increase with each level.

While *Half-Life* and other recent action-strategy games such as *Homeworld* (Relic) and *Age of Empires II* (Microsoft) are beefing up their story lines, it remains that we have no *Bleak House* or *Crime and Punishment* yet, nor are we ever likely to, at least not in the form of a computer game. That's because we are not dealing with novels here, we are dealing with computer games, and, unlike novels, many computer games are not driven primarily by narrative, or at least not a narrative internal to a game. Rather, the driving force behind computer games revolves around their visual and aural effects and the technologies that produce them. No doubt, a game's complexity of puzzles, its degree of intelligent opposition (otherwise known as the game's AI), and its narrative plausibility are all very important to creating an immersive experience. But, in most computer

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[96] Not all reviews of *Half-Life* are so enthusiastic about its narrative, but even those that criticize it inadvertently praise it, as in Ron Dunlin's review from *GameSpot*: "Suffice it so say that Half-Life isn't a great game because of its story; it's a great game because of how it presents that story" (http://www.gamespot.com/action/halflif/review.html).

games, the spectacle of special effects is at least as important as the story line, if not more so. If there is a powerful narrative that attracts people to computer games, it is less a game's plot than the spectacular narrative of the very technology that drives the games: the history of computer game development from the previous release to the newest release, from the old graphics engine to the new graphics engine, from old video card chipsets to new video card chipsets. And, just as the special effects in a computer game increase the intensity of game play—a core element in the experience of computer games that I describe later in terms of the sublime—so too does a gamer's experience of the development of special effects technology.

Science Fiction and the Cinema of Attractions

Before exploring the experience of special effects in computer games, I want to introduce some perspectives on science fiction film that might help to explain their role in computer games. The application of sci-fi film theory to computer games is appropriate, not only because most computer games are based upon sci-fi narratives and settings, but also because both genres rely heavily upon special effects and have suffered from being viewed through the hegemonic optics of narrative. Without a doubt, sci-fi film is most notable for its use of special effects, whether they come to us as ape suits, blue-screen film techniques, digital film manipulation, or 3D computer animation. Yet, as Angela Ndalianis documents, sci-fi film has often felt the brunt of narrative-based criticism, which tends to cast "spectacle as serving a hollow purpose because it serves no 'higher' narrative function" (Ndalianis, 258). Rather than build a critical apparatus to support sci-fi's unique visual qualities, film critics and reviewers tend to adopt criteria used to

evaluate classic realist film, as if narrative is the single most important criteria for evaluating all film in general.

Since the publication in 1986 of Tom Gunning's "The Cinema of Attractions: Early Film, Its Spectator, and the Avant-Garde," some film critics have begun to rescue sci-fi film from the hegemonic grasp of narrative film criticism. Gunning questions what his collaborator, André Gaudreault, calls "the privileged relationship between cinema and narrativity" by arguing that pre-1906 cinema is not primarily narrative (Gaudreault, 68). Rather, it is primarily visual, a cinema of attractions that "directly solicits spectator attention, inciting visual curiosity, and supplying pleasure through a visual and exciting spectacle" (Gunning, 58). Referring to Méliès' trick film, *Voyage dans la lune* (1902), Gunning states, "The story simply provides a frame upon which to string a demonstration of the magical possibilities of the cinema" (Gunning, 58). In the cinema of attractions, then, narrative is merely support for the spectacle.

Part of the cinema of attractions' allure is the very technology itself. As Gunning notes, "Early audiences went to exhibitions to see machines demonstrated (the newest technological wonder...), rather than to view films" (Gunning, 58). A similar situation exists today for special effects films like *Toy Story*, *Antz*, *A Bug's Life*, *The Matrix*, *Titanic*, and *The Phantom Menace*, not to mention all IMAX films, where the film's technology is at least as attractive as its story line. Indeed, much of the driving force behind these films' highly successful box-office returns and video rentals is our fascination with their technical expertise. The web site for *The Phantom Menace* is filled with statistics detailing the production's number of computer artists (250), its record-breaking number of shots (2000), and the percentage of frames employing digital work

(95%). And for many viewers, the most interesting thing about *Antz* is not so much narrative or character, although they are strong in comparison to other computer-animated feature films, but technical facts such as the number of separate control elements required to animate a character's face (300). Our society is captivated by uses of the computer for realistic display and, in some cases, to our being tricked into asking if it's real or if it's digital. As Ndalianis states, "Contemporary effects cinema is a cinema that establishes itself as a technological performance, and audiences recognize and revel in the effects technology and its cinematic potential" (Ndalianis, 258). And further, "We remain astounded at the effortless magic of the transformations we see before us, yet these very transformations also remind us that they are special effects and ask us to be astounded at the technology that produces such magic" (Ndalianis, 260). Part of the experience of recent sci-fi film, then, is what Gunning calls an "aesthetic of astonishment" (cited in Ndalianis, 258), which amounts to the viewer's oscillation between illusionary immersion and technological awe.

The astonishment in oscillating between illusionary immersion and technological awe might fruitfully be understood in terms of the sublime, that pleasurable feeling we experience when we see in representation what we believe would be too dangerous, painful or terrifying in reality. For eighteenth-century philosopher Edmund Burke, the sublime finds its source in "Whatever is fitted in any sort to excite the ideas of pain, and danger, that is to say, whatever is in any sort terrible, or is conversant about terrible objects, or operates in a manner analogous to terror" (Burke). And it results in "the strongest emotion which the mind is capable of feeling" (Burke). The sublime is the deep feeling of delightful terror we experience in works that bring us to intensely emotional

and terrifying, but still satisfying, moments of climax that, in Wordsworth's words, lead us to "elevated thoughts; a sense sublime/ Of something far more deeply interfused" (Wordsworth, ll. 95 - 6).

Importantly, Burke uses the term "astonishment" to describe our experience of the sublime. For Burke, astonishment is "that state of the soul, in which all its motions are suspended, with some degree of horror" and the "mind is so entirely filled with its object, that it cannot entertain any other, nor by consequence reason on that object which employs it" (Burke). In other words, astonishment is a feeling of immersion in the object of contemplation, for we are so filled with astonishment and amazement that we can think of nothing else. In the context of the sublime, therefore, our experience of special effects film is doubly astonishing: we are astonished by the terrifying scenes we watch on the screen and we are astonished by the technological performance responsible for our terror. Our horror at the technological performance may seem less pointed than our horror at what is being represented in the film, but our amazement may still be frightening as we marvel at the technological splendour that has fooled us into belief. And so we are doubly astonished when we watch the liquid morphing of the Cyberdyne T-1000 terminator in *Terminator 2*, the visually stunning battle in the alien's lair between Ripley and the alien monster in *Aliens*, and the prolonged, terrifying, and tragic sinking of the ship and its passengers in *Titanic*. In these moments, we may oscillate between illusionary immersion and technological awe, but we are always astonished.

Recent developments in special effects technology and the coincident rise in the number and popularity of special effects films clearly indicate a return to the cinema of

attractions, or what we might also call the cinema of astonishment.[97] Yet, while a cinema of astonishment might de-emphasize narrative in order to highlight special effects and our responses to them, it remains that narrative still plays an important role in our experience of special effects film, although perhaps not in the same way that film narratologists would like to think. As more and more new visual technologies are developed within a cinematic context, some argue that the real story of special effects movies is their contribution to the story of special effects technology. Brooks Landon, for example, builds upon Gunning's notion of a cinema of attractions to suggest that special effect sequences can be "showstoppers," that "some special effects become intrusive or interruptive—so striking that they interrupt the narrative or actually work to undermine it" (Landon, 1992, 68).[98] We might be lead to think of the long spaceship scenes in *2001*, the extended urban shots in *Blade Runner*, or, as Annette Kuhn has noted, the long

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[97] The importance of special effects in today's cinema is also signified by the rise of counter-movements against the highly produced, special-effects-laden, and very expensive trend in Hollywood movie-making, such as the growing independent film industry and collectives such as Dogme, whose "Vow of Chastity" essentially prohibits post-production special effects. For more information on Dogme, including its complete manifesto, see http://www.dogme95.dk/ (accessed May 2000).

[98] Landon updates his argument from *The Aesthetics of Ambivalence* in "Diagetic or Digital? The Convergence of Science Fiction Literature and Science Fiction Film in Hypermedia." *Alien Zone II: The Spaces of Science Fiction Cinema*. Ed. Annette Kuhn. New York: Verso, 1999, pp. 31 - 49.

spaceship landing sequence in *Alien*, "whose only function must be to invite the spectator's awed gaze" (Kuhn, 1990, 148). Landon takes his argument even further, though, claiming that, rather than being based upon a narrative logic, these sci-fi films are based upon a kind of visual logic, "the special effects story that the film is 'really' about" (Landon, 1992, 69). For Landon, the "special effects story" is both the individual film's story and the story of special effects in film.

George Lucas's *Star Wars* series provides an excellent example of this visual logic at work, both within the films' stories and in the story of film. In terms of the narrative of film technology, *The Phantom Menace* is the latest "episode" in special effects from Industrial Light and Magic (ILM), George Lucas's effects production company. After the relatively computer-free effects in the original *Star Wars* (1977), ILM began to employ more digital effects, taking the original *Star Wars* trilogy and digitally re-mastering their effects for re-release twenty years later in 1997. Ndalianis calls this re-release "an homage to the changes that have occurred in computer graphics ... and a virtuoso performance that takes a bow for the 'improvements' in special effects the film has introduced" (Ndalianis, 259). *The Phantom Menace*, with 95% of its frames employing digital effect of some kind, is the latest magic performance from a company that has been writing the story of late twentieth-century special effects.

At the level of the film itself, *The Phantom Menace* works as well as any of the *Star Wars* films to explain Lucas's construction of a visual logic of special effects. The film is visually organized so that adventures and battles grow progressively in size and spectacle, expanding from the opening shootout on board a space ship involving only a handful of soldiers at a time, to the more spatially expansive undersea trip through the

centre of the planet Naboo (complete with the dangerous yet visually stunning opee sea killer and sando aqua monster), to the panoramic and highly populated battlefields on land and in space at the film's climax. In strong contrast to these battle scenes, we cut to one-on-one combat, first between Darth Maul and Qui-Gon Jinn and finally between Darth Maul and the young Obi-Wan Kenobi. Set within a labyrinthine chamber of suspended walkways, laser beam security systems and a seemingly bottomless pit, this closely shot sequence contrasts in tone and look with the more expansive, populated, and humour-seasoned battle scenes. But this does not detract from the film's visual logic, which to this point centres on expansion. Indeed, this visual contrast heightens our sense of awe, and it does so primarily through special effects. In this sense, John Podhoretz of the *New York Post* is correct when he writes "It's true, as many have complained, that the characters in *The Phantom Menace* don't really touch the heart. But people have always been beside the point in *Star Wars*.... What's stunning about *The Phantom Menace* is the visual storytelling."[99] Our astonishment over *The Phantom Menace*, therefore, is a combination of illusionary immersion in the visual storytelling and technological awe at the latest developments in special effects.

Double Astonishment in Computer Games Technology

Returning to computer games, we find a visual logic at work similar to the visual logic in sci-fi film. In general, as players progress through a game from level to level, the special

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[99] Podhoretz, John. "Captivating." *Nypost.Com Movie Reviews.* http://www.nypost.com/movies/7848.htm (accessed July 1999).

effects tend to get more dazzling, as if the prize for solving puzzles or beating opponents is the chance to test their game play in a more difficult, but more visually astonishing environment. In first-person shooters like *Doom*, *Quake*, and *Half-Life*, monsters and opponents get bigger and more fantastical; in strategy games like *Age of Empires II*, buildings, communities, soldiers and war machinery get larger and more visually detailed; similarly, in simulation games like the *SimCity* series, buildings and transportation systems grow in size and become more visually prominent and futuristic looking; and in puzzle-adventure games like the remarkably rich *Eve* from Peter Gabriel's Real World Multimedia, mudflats become Edenic gardens and music studios become populated with music samples and animated video sequences for the user to assemble into interactive music videos. In all cases, players are given more astonishing special effects as they progress through the game, suggesting that our experience of computer games is structured in significant part by the increasing intensity of our astonishment at special effects.

Like much sci-fi film, narrative takes on only a supporting role in computer games, being used mainly as "a frame upon which to string a demonstration of the magical possibilities," not of the cinema, but of multimedia technologies (Gunning, 58). These magical possibilities vary according to a game's design, but almost always involve visual splendor and special effects. And just as in special effects film, we experience a sense of double astonishment in special effects computer games, first at the terrifying scenes in which we participate—especially in action-adventure games—and, second, at the game's performance of the latest in special effects technology. We also oscillate between illusionary immersion—when one's "mind is so entirely filled with its object"

(Burke) that one's body shifts and squiggles in imitative partnership with the game character—and technological awe—when we marvel at the game's visual, aural, and interactive technologies. When we play computer games, rather than seek narrative, we frequently concern ourselves with experiencing and participating in the sublime technological spectacle. When playing *Age of Empires*, we don't worry much about the logic of why town's people simply appear in the centre of our dark ages village merely for the cost of some food stores. The important thing is that they *do* appear so that they can build the next house, village centre, mining camp, or military barracks and help work our way from the dark ages, to the feudal age, to the castle age, and ultimately to the imperial age, while we watch our village become all the more visually spectacular as we go. Nor do we wonder, when playing *Half-Life*, why our character, who is a nuclear physicist with a PhD, can wield military arms like Arnold Schwarzenegger on steroids. And we don't really need to concern ourselves with why there are alien creatures big and small wandering around the Black Mesa Research Facility. They simply look scary and dangerous, behave weirdly and threateningly, and need to be eliminated before they eliminate us in great flashes of electricity, with powerful shots of radiation, or in bloody hand-to-tentacle battle. And it doesn't make sense why, when running down a three-dimensionally rendered hallway in *Doom*, we get slightly dizzy, as if we were on an amusement ride, when this would never happen when running down a hallway in real life. The important thing is that these games use special effects to astonish us and that our astonishment at the technological spectacle increases in intensity as we work our way through them. When the intensity and our astonishment wanes, it's time to install a new game and seek astonishment again.

And finally, like sci-fi film, the most powerful narrative element of computer games is not so much a game's story line, nor is it so much the retelling of a player's individual game episode, the story he or she created within the narrative boundaries of the explorative game world. Rather, the striking narrative of computer games is the continuously climaxing state of the art of computer game technology performed in spectacular fashion and for the sake of astonishment whenever the game is played. This narrative is always performed live by the game and the player, and relived repeatedly in gamer community venues such as online game reviews, newsgroups, and web sites.[100] This is not the sort of narrative that either Aarseth or Murray discuss, for it exceeds an individual game's story line. And it is not a meta-narrative, for it does not tell the story about computer game stories. Rather, it is a narrative about the anti-narrative of special effects and about the astonishment over new developments in special effects technology we feel when we play computer games.

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[100] One way in which game players gain some of the visibility of professional game reviewers is on web sites that support player reviews of games. GameSpot encourages its readers to contribute their own reviews and ratings of games, or, as I have been arguing, to contribute to the telling of the story of game technology. These reviews are not normally reflections upon one player's experience of blowing away a particular alien or of figuring out a specific puzzle, although they do comment on moments in the game. Instead, as with professional reviews, they focus on a game's technical merit, hardware requirements, and, of course, its level of challenge and fun. See http://www.gamespot.com (accessed May 2000).

Just as the *Star Wars* series tells the story of cinematic effects development, so too do computer games tell the story of multimedia technologies development. The development of 3D first-person shooters in the 1990s provides an example of this narrative. The progression from *Wolfenstein* (1992), to *Doom* (1993) and *Doom II* (1994), to *Duke Nukem 3D* (1996), to *Quake* (1996) and *Quake II* (1997), to *Unreal* (1998), and to *Half-Life* (1998) is the story of 3D game engines, video card technology, and game genre design. Each new release marks a new episode in game development and an attempt to overtake the last release by offering enhanced game play, more immersive graphics and sound, and better special effects. Indeed, each new game title is a new performance of computer technology. In addition, each new visual or aural effect is a reflection upon previous games and an attempt to surpass them through technological development. Game developers know that many gamers will inevitably compare their new game to previous releases in the genre. Indeed, reviews of *Half-Life* inevitably point back to its predecessors, whether it's to say that, until *Half-Life*, "Quake has long been the standard"[101] or, until *Half-Life*, "Games like Quake and Quake 2, Doom and others, haven't really captivated me."[102] Others reflect more directly upon the evolution of the technology, claiming that *Half-Life* is "An excellent utilization of the *Quake II* engine ...

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[101] Skinner, Reed. "Half-Life." *The Gamers View*. http://www.gamersview.net/reviews/halflife.htm (accessed May 2000).

[102] Jaco. "Half-Life." *Gamer's Edge*. http://gamersxtreme.virtualave.net/reviews/action/half%20life/halflife.htm (accessed May 2000).

with interesting nonplayer character (NPC) AI."[103] And almost all comment on its technological requirements, including whether it can perform on older machines: "Running on a 450-Mhz Pentium II machine, Half-Life was supersmooth at 640 by 480, as well it should be. But it also looked good running on a Pentium II-266 at the same resolution (640 by 480)."[104] *Half-Life*, or almost any other computer game for that matter, exists within a narrative of special effects technology, a narrative that is in many ways the seemingly never-ending story of digital technology's ever-changing scenery and a narrative that can be as astonishing as the experience of the game itself.

The Performativity of Astonishment in Multimedia

Computer games' paradoxical narrative of anti-narrative, prefigured in sci-fi film, suggests that the aesthetics of new forms of multimedia art may not be best explained using narrative-based perspectives. I am not arguing that we completely abandon narrative perspectives in our analyses of multimedia; indeed, as my examples have shown, many computer games are based upon narrative or allow for players to build stories within a narrative framework provided by the game. But the attraction to computer gaming is much more than an attraction to narrative. It is also an attraction to special effects, to the astonishment we experience when playing computer games, and to participating in their performance through interactivity. This is where computer games

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[103] O'Neal, William. "Half-Life." *Gamecenter*. http://www.gamecenter.com/Reviews/Item/0,6,0-2289,00.html (accessed May 2000).

[104] *ibid.*

are different than sci-fi films. Where watching sci-fi films normally means being only an audience to the performance of special effects, playing computer games means being both audience and performer, since the special effects rely upon the player's interaction with the game. In this way, players also become the performed, as they must perform certain interactions to see the special effects. The better a player performs, the better the game performs. And so, game players become a mixture of audience, performer, and performance.

This aesthetics of computer game play can be understood only in a very limited context within linguistic-based or narrative-based frameworks because these do not consider adequately the logic of special effects and our astonishment at them. One could re-state my argument to say that the better a hypertext reader navigates a work of hypertext fiction, the better the hypertext performs. But that would be missing a key difference between a work of multimedia based upon a logic of special effects and one based upon a logic of narrative. The special effects logic of computer games absolutely requires good game play to perform well. Hypertext fiction, while still performative, does not rely so heavily upon technological effect and therefore does not require readers to learn many new skills, tricks, or cheats to perform the work. In this way, Aarseth's aporia-epiphany dialectic can help to differentiate between how one moves through a hypertext and how one moves through a computer game. Yet, even though Michael Joyce's hypertext fiction, *Afternoon*, exemplifies the aporia-epiphany dialectic, especially in its use of Storyspace's guard fields to control what lexias are available to the reader and when, this is not the same as solving puzzles under time restrictions nor is it like the adrenaline rush of visual and aural distraction we find in many computer games. The

performance of computer game play depends much more upon physical stimulation, and the epiphany is less narrative gratification than visual and aural pleasure. Most importantly, our astonishment at the visual representations in computer games and at their technological display simply cannot be explained within a narratological framework.

As the example of computer games suggests, a better framework for analyzing our experience of multimedia may come from a phenomenology of visual and aural experience. Although there is no space in this chapter for a full consideration of a phenomenology of multimedia, the example of special effects in computer games gives us some directions for further exploration. I would like to summarize now, if only briefly, the direction that I have been following in this study: the performativity of astonishment in multimedia.

While the experience of computer games is based substantially upon our astonishment at special effects and at the technology that creates them, our experience is also dependant upon our performing the technology. In other words, our participation in the event is significantly responsible for the intensity of our astonishment, not only for our emotional investment in the experience—a form of participation that may recall Coleridge's notion of "a willing suspension of disbelief" (Coleridge, 452)—but also for the necessity of our physical interaction with and response to the work. Yes, reading a book demands some physical action on our behalf to hold the book, to turn pages, and to scan the lines of words we read. But interacting with a computer game involves substantially more. It requires considerably more hardware and a level of hand-eye co-ordination well beyond what's required for reading most books. There is nothing new in

arguing that our perceptions are partially shaped by ourselves. In his contemplation upon the sublime in "Tintern Abbey," Wordsworth notes that the power of his impressions "of all the mighty world/ Of eye, and ear," come from "both what they half create,/ And what perceive" (Wordsworth, ll. 105 - 7). In computer games, however, it is the physical interaction with the game (mouse clicking, joystick movement, data glove twitching) that helps to create the spectacle and our experience of it. In this way, our experience of the work is deeply entwined in both our psychological *and* physical performance of it.

This notion of performativity applies to all computer interactivity where there is a feedback loop, from word processors and spreadsheets to web pages and hypertext fiction, but it is especially interesting in computer games, where the feedback loop is particularly intense, fast-paced, and, compared to a word processor or spreadsheet programme, more central to the work's experience. As I have noted, most computer games require players to perform the technology by interacting with it, by discharging special effects as they progress. Like actors given a script with stage directions, game players perform the game within the context and limitations of the game's environment. And, like the actor, this performance is not without the combined shaping hands of the director, choreographer, and set designer, or in the case of computer games, game designers, programmers, and artistic directors. The game's boundaries, restrictions, and rules—the AI that makes its event space—organize the technology's performance of the user, for they determine what players can and cannot do, but more importantly, what they must do in order to perform the game in the first place. The event space of *Half-Life*, for instance, is very restrictive. Essentially, players can travel around a research complex (walk, run, jump, crouch, crawl, and swim), open doors, push objects, and shoot a variety

of weapons. They can also initiate conversation with other characters in the complex, but these are severely limited to two or three canned responses. And, as in so many computer games, *Half-Life* includes cheat codes that expand the game's event space by relaxing the rules and increasing the player's options (immortality, walk through walls). One can imagine improvements in game AI that will increase the player's freedom within the game's event space, but as with any game, there will still need to be rules and boundaries. Regardless, even within a more expansive event space, the players' performance of a computer game is simultaneously the game's performance of the player, and these mutually dependent performances are integral to the feelings of astonishment many players seek when playing computer games.

There is a socio-historical dimension to our experience of computer games that should not be overlooked here, for what may seem astonishing to us today may seem ordinary or commonplace tomorrow. At this point in the history of multimedia, computer games elicit a technological awe in large part because of their novelty. Indeed, the entire computer industry seems driven by novelty, for new developments command our attention if we hope to stay current with our mixture of software and hardware. And our performance in the story of special effects technology depends heavily upon new technologies coming to market frequently enough to stimulate our astonishment at the technological marvel. Indeed, often what makes one version of a game better than its predecessor is its implementation of new technology. Importantly, this drive towards the new demands a substantial output of capital for user participation, meaning that access to the experience is restricted by class. Even though gaming technologies get less expensive over time, computers and game consoles are still out of reach for many. Therefore, rather

than commit the error of hypertext theorists who see the politics of multimedia as only a shift in power relations between authors and readers, we need to remember that the political effects of multimedia extend beyond the experience of consuming multimedia to the larger social politics of class. In other words, the performativity of astonishment in multimedia is political not only for its disruption of power within the humanities, but also for its restriction of access to culture along class lines.

Just as gamers often look to the new for their source of pleasure, scholars of multimedia need to look for new frameworks for understanding our experience of multimedia. A framework built upon the performativity of astonishment in multimedia allows us to investigate the intersections between interactive digital performance and Gunning's notion of an aesthetics of astonishment, or the user's pleasure in shifting between immersion (a suspension of disbelief) and technological awe (self-awareness). And it also allows us to see connections between the materiality of multimedia, the physical act of interaction, and our phenomenological experience of multimedia. If a large part of the attraction of computer games is their technological effect, and if technological effect helps to create an immersive experience, then we need to understand multimedia performance within the context of astonishment, both in its psychological and physical dimensions. In the case of computer games, where users help perform the technological spectacle, astonishment becomes a complex mixture of technological astonishment—astonishment at state-of-the-art technology—and self-astonishment—astonishment at our own performance of the technology.

Thinking about the performativity of astonishment in multimedia means thinking about the physical practices of multimedia, not only those practices involved in the

production and distribution of the software and hardware, but also the physical practices of consumption. It means thinking outside of the linguistics-based and narrative-based frameworks that still dominate many theorizations of cultural consumption, and are being applied to multimedia with only minor success. It means rethinking the assumptions that place word, mind, and intellect above image, body and emotion. And, finally, it means adopting new strategies for the legitimization of technology in the humanities, strategies that may have deeper effects on how we imagine the humanities than current models for theorizing multimedia recognize.

In recent years, the world wide web has been moving progressively from a primarily word-based environment to a multimedia-based environment filled with images, animation, video, audio, and 3D virtual reality spaces. It's true that new encoding languages like XML are created to handle complex word manipulation, but they are also built to handle rich media. And it seems that almost everyday there is a new technology for streaming video, embedding audio, or creating pulsating interactive animations. The web is increasingly becoming a space for the performance of digital special effects. As this performative space grows, theories with linguistic and narrative biases will need to transform themselves to consider far more successfully the highly visual and aural nature of multimedia. And rather than merely pass off non-print culture as low entertainment that is dumbing down the intelligence of the population, new perspectives that probe the performativity of astonishment in multimedia will need to redefine traditional concepts of high and low and the Cartesian divisions between mind and body that support them. Computer games give us a place from where we can see the unique aesthetics of

multimedia, an aesthetics that may require some re-imagining of how we understand the humanities.

Conclusion

Making the Links

In this dissertation, I have explored various facets of the politics of multimedia in the humanities, such a wide-spanning variety, in fact, that it is worth restating the underlying premises of my approach. I argue that we must adopt new strategies for legitimizing technological practice in the humanities, strategies that may mean disrupting traditional notions of what it means to teach and conduct research in the humanities, but that ultimately may lead to a more socially responsible role for the humanities in shaping our increasingly technological society. My method has been to consider threats, both real and imagined, to the humanities as an institutional organization of academic disciplines and as the institutionalized study of human expression. My goal has been to encourage our engagement with technological practice so that we may successfully influence technology's socially equitable development and use.

I have approached my argument at two levels in the hopes of demonstrating the comprehensiveness and interconnectedness of the changes we face and that we must carefully conceive. First, I placed the relationship between the humanities and technology within its historical context to show how deeply rooted the bias against technology is in traditional conceptions of the humanities and how, at this moment of

rapid economic globalization, the humanities is under increasing pressure to demonstrate its relevancy within the context of economic growth. One cannot understate how critical it is that we approach the question of relevancy well-armed with strategies to combat the economic imperatives that corporate multi-national interests like the World Bank and the International Monetary Fund wish to impose, but we should not be so defensive that we connect all technological practice and skills training with these economic imperatives. Indeed, we should imagine ways in which our relationships to industry, technology, and technical skills training may effect positive change, both in the humanities and in society at large. For many, the legitimization of technological practice in the humanities necessarily means succumbing to economic interest. This perception is, I argue, unnecessarily fearful. Instead, I urge that we wrench apart the seemingly fused connection between technological practice and dehumanizing economic interest so that we may make links between technological practice and human expression.

Second, I focused on one of the most significant and successful attempts to legitimize technological practice in the humanities as an area of academic study: hypertext theory. While most hypertext theorists do uncover constructive connections between technological practice and human expression, they base their theorizations upon frameworks which ignore the material aspects of multimedia production and consumption. Their focus upon linguistics-based and narrative-based theories of meaning prove inadequate to understanding our astonishment at participating in the performance of technological spectacle. As such, they retain the parallel binaries between word/mind/intellect and image/body/emotion that have played a significant role in defining the humanities against technology and technological practice. A theoretical

framework that embraces the physicality of our interactions with multimedia and the connections between the physical and the psychological in our experience of multimedia can also consider more effectively the material elements of its consumption.

I have argued that our experience of computer games, one of the most sophisticated and sensationally rich forms of multimedia, is based in large part upon our psycho-physical response to special effects and upon our participation in the story of technological progress. The astonishment we feel when playing computer games is a mixture of illusionary immersion in the visual and aural representations we experience and the awe we feel when we recognize the spectacle as technological. In large part, our technological awe is dependent upon an awareness of progress in special effects technology. Indeed, computer games and the discourse that surrounds them encourages our amazement at technological advancement and in our abilities to participate in its always unfolding story. But our access to participating in the story of this technological progress is highly mediated by the materiality of multimedia, for the cost of admission not only involves constantly learning new physical skills of computer interactivity. More importantly, we must always invest financially in the latest hardware and software. In this way, our desire to participate, not only in computer gaming technology, but in most widely available computer technologies such as the Internet, obscures the computer industry's desire to have us consume. So, while multimedia may offer new forms of participatory art and entertainment, our access to them is significantly shaped by our ability to pay the price.

The astonishment we feel when playing computer games or interacting with other spectacular multimedia is not limited to our consumption of finished works, but it can

also help to explain the attraction many designers feel to building multimedia. Playing a computer game and building works of multimedia each require users to learn the rules of technological performance. Game players learn the rules of the game and programmers learn the rules of the development environment. Both participate in the unfolding story of technological development in their performance of the gaming and programming environments. As anecdotal evidence, let me turn to my experiences teaching in McMaster University's Multimedia programme. The students I teach frequently comment on their excitement and awe at the hardware and software they use in our labs to build their assignments. Inevitably, the emotional response students feel at first is partially dampened by the realities of assignments, but access to technology remains a constant force in their attraction to building multimedia. In other words, their astonishment at multimedia seems driven in large part by their access to technology, suggesting that part of the astonishment we feel when we consume multimedia is an astonishment of access. For many students of multimedia, access to technology and technological skills training translates into access to employment opportunities in industry and further experiences of technological astonishment.

This connection between humanities-based multimedia and industry makes some in the humanities uncomfortable because it suggests a link that is less disinterested than some scholars feel we need for social influence. It is true that a blind submission to industry needs could result in significant damage to the detachment that students and scholars need for impartial research. So, we need to be very careful about how the astonishment of technological access plays itself out in our research and in the new courses and programmes of multimedia study that we design. We can ignore neither the

wide variety of digital works of culture nor the potential for future genres of multimedia that have not yet been established. Indeed, as the experts in creating and evaluating human expression, humanities scholars should be at the forefront of multimedia design and criticism. This means re-evaluating our connections to industry, our fears of and desires for technology, and our theories for explaining our experiences of digital culture, all within the context of the materiality of multimedia. I want to make it clear that, while my assessment of the problem of technological practice and its theorization in the humanities is generally negative, the news is not all bad. Indeed, there is much to be positive about as there are many individuals, associations, and institutions that are legitimizing technological practice and its study within a humanities context. Individuals like Espen Aarseth, J.D. Bolter, Richard Grusin, Donna Haraway, N. Katherine Hayles, Michael Joyce, George Landow, and Janet Murray, to name only a few major scholars in the area, are publishing book-length studies that focus on a variety approaches to multimedia and, as such, are helping to legitimize its study. Aarseth and Murray investigate new theories of cybernarrative; Bolter and Grusin examine the adoption of earlier media types in multimedia, a process they call remediation; Haraway and Hayles explore relationships between the mind, body and gender in cyberspace; and Joyce and Landow conceive of hypertext as the instantiation of post-structuralist notions of textuality. A number of scholarly associations and annual conferences focus on areas of multimedia, such as the Consortium for Computing in the Humanities (COCH), the Alliance for Computers and Writing (ACW), the annual Digital Arts and Culture conference (DAC), and the Association of Computers in the Humanities and its allied association, the Association of Literary and Linguistic Computing (ACH-ALLC). And

calls for papers abound for non-association conferences and book collections on digital media.

The news continues to get better as many universities start to offer programmes in areas of multimedia. In Canada alone we have BA programmes in Multimedia at McMaster University and the University of New Brunswick, Master's level programmes in Humanities Computing and in Instructional Technology at the University of Alberta, and the recently announced MFA in Digital Media at the University of Waterloo. Partnerships between the University of Toronto and Sheridan College and between York University and Centennial College have also spawned new programmes in digital media. In addition, large humanities computing projects like the Orlando Project, the Perseus Project, and the British Women Writers Project have either introduced or are about to release new scholarly tools that demonstrate the academic rigour with which computing technologies have been brought to bear on humanities research. And finally, many new academic projects are in the early stages of design or are already receiving funding. Some in Canada include projects funded by the Canadian Foundation for Innovation at the University of Alberta (digital text delivery tools) and McMaster University (broadband media streaming). In addition, Marc Renaud, president of SSHRC, is currently investigating the possibility of a digital national data archiving facility. Add to this short list the many individual projects underway or under consideration in Canada and we can see that humanities computing and multimedia are experiencing tremendous growth, enough to suggest that they are well on their way to being accepted as legitimate areas of humanities scholarship.

If humanities computing and multimedia are so healthy and growing so rapidly, then it seems inevitable that I ask about the necessity of this dissertation is necessary. Perhaps it is all the more necessary given that these are still the early stages of legitimacy and that we have an opportunity to shape new areas of study and their implementation as programmes and institutes. Also, growth in these areas does not come without considerable struggle. Indeed, as I documented in chapter 2, the approval process for the BA in Multimedia at McMaster University faced considerable opposition from faculty members even though it was so well supported by university administration and government. We can only guess at what scholarship and teaching in the area is resisted or even rejected at other institutions. As a step towards healthiness, however, we must also encourage, formulate, and take seriously critical appraisals of humanities computing and multimedia as areas of academic study.

This dissertation represents the beginning of my own contributions to the healthy and growing corpora of theory and criticism of humanities computing and multimedia. In it, I have shown how the legitimization of technology and technological practice in the humanities problematizes understandings of the humanities, understandings that are based upon a history of binaries and hierarchies that must be questioned before we can move towards a deeper understanding of digital culture. And I have demonstrated how some attempts to legitimize humanities computing and multimedia continue to rely upon restrictive cultural hierarchies and so fail to account for the breadth of forms of multimedia. We need new theoretical perspectives to explain digital culture and we need to support digital practices that may disrupt traditional scholarly modes but that may lead to rich forms of cultural expression. At the risk of sounding overly hyped, this

technological moment is a time of social and cultural change, and the humanities may need to change not only to keep up, but also to help lead the way.

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